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ECONOMIC STUDIES OF DAIRY FARMING IN NEW YORK, IX

GRADE B MILK WITH CASH CROPS AND MIXED HAY ROUGHAGE, CROP YEAR 1925 WITH FIVE-YEAR SUMMARY

A THESIS

PRESENTED TO THE FACULTY OF THE GRADUATE SCHOOL OF CORNELL UNIVERSITY FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

BY

JOHANN CHRISTIAAN NEETHLING

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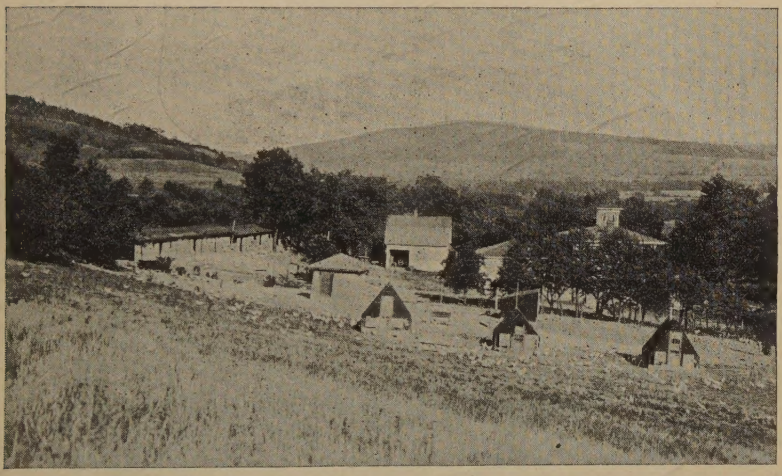
Economic Studies of Dairy Farming in New York. IX

Grade B Milk with Cash Crops and Mixed Hay Roughage, Crop Year 1925 with Five-Year Summary

J. C. Neethling

In cooperation with the Bureau of Agricultural Economics of the United States Department of Agriculture



THE POULTRY ENTERPRISE DIVERSIFIES DAIRY FARMING WHERE CASH CROPS CANNOT BE GROWN

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ECONOMIC STUDIES OF DAIRY FARMING IN NEW YORK. IX. GRADE B MILK WITH CASH CROPS AND MIXED HAY ROUGHAGE, CROP YEAR 1925 WITH FIVE-YEAR SUMMARY

J. C. NEETHLING [1]

For five consecutive years a study has been made of dairy farms in the Chenango Valley, in an area situated in northern Chenango and southern Madison Counties. Most of the farms are located between Eaton in Madison County and North Norwich in Chenango County. Results for four of the five years have been published.[2]

This bulletin consists of two parts: Part I, a report of the results for 114 farms for the fifth year, ended April 30, 1926, covering the 1925 crop season; Part II, a comparison of the results for the five crop years studied, 1921 to 1925 inclusive, with the object of bringing out some of the underlying principles of farm management in the region.

[1] For the crop year 1925, the field work was done by: L. R. Blanding, J. O. Ellsworth, C. W. Gilbert, I. F. Hall, O. R. Johnson, W. F. Knowles, J. C. Neethling, W. D. Nicholls, W. J. Pretorius, J. L. Tennant, and Dilworth Walker.

The information was furnished by the following farmers:

Operators: L. A. Abbott, Frank Adams, F. Adsit, Miss O. Allen, C. C. Babcock and son, George W. Baker, W. J. Barber, M. H. Bartlett, Fred A. Beecher, Wayne G. Benedict, E. M. Billings, T. W. Billings, A. J. Bingham, E. Briman, H. Burt, Burt Butts, F. H. Chrisman, E. B. Clark, W. G. Clark, W. H. Coleman, Colgrove and Masters, Condorelli and Castiglia, L. J. Conley, E. M. Cook, H. R. Cook, C. J. Coy, W. R. Crumb, I. Davidson, Lewis H. Dennis, I. D. Edgarton, C. A. Evans, William E. Fairchild, W. R. Faulkner, D. N. Felt, W. A. Follett, C. L. Frink, J. E. Gaines, M. D. Gordon, F. F. Guthrie, F. Hamilton, G. Hicox, H. Holmes, Eugene Howard and son, John Howard and son, B. M. Humphrey, Charles Izard, W. P. Jeffrey, Charles Jenks, E. H. Jenne, G. N. Jones, L. S. Jones, M. R. Jones, J. A. Kelly, L. W. Knapp and son, H. N. Kutschback, G. W. Lamb and son, J. W. Lamb, P. Lamb, W. H. Langworthy, Homer N. Lathrop, C. B. Leach, George H. Leete, W. O. Loomis, Mrs. McMulligan, C. C. Merrill, F. Moon, J. C. Morris, J. M. Olsen, L. W. Paddelford, L. W. Palmer, Parker Bros., C. T. Percell, Will Pike, V. P. Pontius, W. C. Record, Leslie Reese, E. B. Reynolds, L. A. Rhoades, W. N. Ross, A. C. Sabin, I. U. Scott, H. N. Sexton, W. H. Shapley, L. A. Sisson, E. P. Smith, F. J. Snell, E. J. Snitchler, A. Squires, E. Stapleton, F. A. Starrett, J. Sterle, C. V. Stocum, C. B. Stowell, G. R. Sundell, A. P. Svenson, J. Tanton, L. Thayer, F. Thompson, O. Thornton, S. Tracy, R. R. Usher, F. A. Van Housen, B. J. Van Wagner, R. H. Volmer, Floyd Wells, C. R. Whipple, G. D. Whitford, H. H. Wickwire and son, C. G. Wilcox, H. H. Wilcox, M. J. Wilcox, F. E. Williams, S. S. Woodman, T. E. Wratten.

Landlords: A. A. Abbott, G. Adsit, H. S. Baker, Mrs. Esther Bresee, C. J. Coleman, Mrs. R. Comstock, W. C. Crouch, Mrs. A. Davis, Mrs. E. Dix, Mrs. E. Dungey, G. Firman, S. Fisher, B. Fuller, A. A. Hartshorn, W. H. Hartwell, Clark Holmes, A. E. Lamb, C. H. Lathrop, E. B. Lyons, Mrs. C. Morse, W. J. Morse, Alfred Reese, F. A. Rexford, D. E. Reynolds, F. Rhoades, N. F. S. Russell, D. J. Sweeney, A. M. Tefft, C. D. Thayer, K. C. Thornton, F. T. Tracy, Usher estate, C. Wickwire.

The information was gathered thru a cooperative agreement between the Department of Agricultural Economics and Farm Management of the New York State College of Agriculture at Cornell University, Ithaca, New York, and the Division of Farm Management and Costs of Production, Bureau of Agricultural Economics, United States Department of Agriculture, Washington, D. C.

The study was made under the direction of E. G. Misner.

Also presented to the Faculty of the Graduate School of Cornell University, March, 1928, as a major thesis in partial fulfillment of the requirements for the degree of doctor of philosophy.

[2] The bulletins concerning this region are:

Economic studies of dairy farming in New York. IV. Grade B milk with cash crops and mixed hay roughage, crop year 1921. By E. G. Misner. Cornell Univ. Agr. Exp. Sta., Bulletin 441. 1925.

Economic studies of dairy farming in New York. VI. Grade B milk with cash crops and mixed hay roughage, crop year 1922. By E. G. Misner. Cornell Univ. Agr. Exp. Sta., Bulletin 452. 1926.

Economic studies of dairy farming in New York. VII. Grade B milk with cash crops and mixed hay roughage, crop year 1923. By E. G. Misner. Cornell Univ. Agr. Exp. Sta., Bulletin 455. 1926.

Economic studies of dairy farming in New York. VIII. Grade B milk with cash crops and mixed hay roughage, crop year 1924. By E. G. Misner. Cornell Univ. Agr. Exp. Sta., Bulletin 462. 1928.

PART I. RESULTS FOR THE CROP YEAR 1925

REGIONAL CONDITIONS

The system of farming in this region is diversified. Cash crops, as peas, cabbage, and potatoes, together with feed crops, such as hay and silage, are combined with the production of Grade B milk for the New York milk market.

The soils of the farms studied were mostly Lordstown and Ontario gravelly silt loam, Lordstown silt loam, Wooster silt loam, Fox gravelly loam, and Chenango gravelly silt loam.

Most of the farms are located in the vicinity of the villages of Sherburne, Earlville, and Hamilton, and are served by the Delaware, Lackawanna and Western, and the New York, Ontario and Western Railroads. Of the total number, 71 were valley farms and 43 were hill farms.

The precipitation and climatic conditions as recorded at Norwich for the year are given in table 1:

TABLE 1. PRECIPITATION AND TEMPERATURE AT NORWICH, CHENANGO COUNTY, IN 1925

	Precipitation		Temperature	
	Inches	Per cent of normal	Actual (degrees F.)	Per cent of normal
1925:*				
May	3.11	87	51.9	93
June	5.28	148	68.0	106
July	5.40	132	67.4	98
August	3.13	84	65.8	99
September	4.27	105	60.4	100
October	4.18	122	41.7	84
November	4.45	161	36.4	99
December	2.59	89	27.6	111
1926:†				
January	2.76	90	23.0	103
February	4.42	137	21.1	100
March	2.92	89	24.5	77
April	3.19	102	38.6	87
	45.70	112	43.9	96

* Climatological data (1925), New York section, volume XXXVII, No. 13, pages 100 and 101.
† Climatological data (1926), New York section, volume XXXVIII, No. 13, pages 100 and 101.

Compared with the normal precipitation and temperature for the crop years of 1923 and 1924, the crop year 1925 was wet and cold. The rainfall from May 1 to October 31 was 113 per cent of normal, while the temperature was only 97 per cent of normal. The rain in June was 148 and in July 132 per cent of normal.

SIZE OF BUSINESS

The size of the farm business is determined by several measures, the most important being: (1) number of acres in the farm, (2) capital per farm, (3) size of the most important enterprise, in this region the size of the dairy herd, and (4) number of men employed on the farm.

ACRES IN FARM

The average size of the 114 farms was 168.8 acres. Of the 168.8 acres, 39.1 per cent was in crops, 52.9 per cent in pasture, and 8.0 per cent in woods, farmstead, fences, and waste (table 2). Of the pasture land, 45.9 acres were in permanent pasture not tillable, 29.1 acres in permanent pasture tillable, 14.1 acres in woods that were pastured, and 0.1 acre in rotated pasture.

TABLE 2. AVERAGE SIZE OF 114 FARMS

	Average acres per farm	Per cent of total acres
Crop land	66.0	39.1
Woods pastured*	14.1	8.3
Rotated pasture	0.1	0.1
Permanent pasture tillable	29.1	17.3
Other permanent pasture	45.9	27.2
Woods not pastured	8.5	5.0
Farmstead, roads, and fences	5.1	3.0
Total	168.8	100.0

* Equivalent to 2.7 acres of open pasture.

The size of the farms ranged from 43 acres to 550 acres. Of the 114 farms, 60 ranged from 101 acres to 180 acres in size, 36 contained more than 180 acres, while only 18 had less than 101 acres (table 3). These 18 farms averaged 83.4 acres, which indicates that only a few small farms were included in the study.

TABLE 3. RELATION OF SIZE OF FARM TO CAPITAL, NUMBER OF COWS, AND MAN EQUIVALENT PER FARM

	Acres per farm				
	100 and less	101 to 140	141 to 180	181 to 220	More than 220
Average acres in farm	83.4	123.1	161.0	201.9	295.9
Number of farms	18	33	27	14	22
Capital per farm	$10,285	$13,817	$16,251	$15,435	$23,741
Capital per acre	$123	$112	$101	$76	$80
Number of cows	14.6	19.6	22.1	23.2	32.9
Acres per cow	5.7	6.3	7.3	8.7	9.0
Man equivalent per farm	1.8	2.0	2.6	2.3	3.2

CAPITAL PER FARM

The average capital per farm was $15,950, of which 65.9 per cent was in real estate, 24.3 per cent was in livestock, and 9.5 per cent was in machinery (table 4). There was $22.97 worth of machinery per acre of crops grown.

TABLE 4. AVERAGE CAPITAL FOR 114 FARMS

	Value per farm	Per cent of total
Real estate	$10,507	65.9
Livestock	3,874	24.3
Machinery	1,515	9.5
Feed and supplies	54	0.3
Total	$15,950	100.0

The capital per farm varied from $5520 to $43,411.

Altho the average capital per farm was larger as the size of the farm increased, there was a tendency for capital per acre to decrease with an increase in size of farms (table 3). Farms averaging 83.4 acres had $10,285 capital per farm; those averaging 161 acres had $16,251, while the farms having more than 220 acres averaged $23,741 per farm. The capital per acre was respectively $123, $101, and $80 in these groups. This decrease in capital per acre as the size of farms increased was partly due to the tendency for the larger farms to have a greater percentage of cheap hill land and partly to the fact that permanent improvements do not increase proportionately with an increase in acres per farm.

NUMBER OF COWS

There were 22.4 cows per farm, ranging from 14.6 cows on farms of 100 acres or less in size to 32.9 cows per farm on those having more than 220 acres. Small farms kept a cow for every 5.7 acres and large farms kept a cow for every 9 acres (table 3). There has been a gradual increase in the percentage of purebred cows, from 31 per cent of the herd in 1921 to 39 per cent in 1925. There is, however, a smaller percentage of purebred young stock than in preceding years. The number of purebred heifers one year old and over was about the same as in 1921, but the number of purebred heifer calves decreased from 57 per cent of the total in 1921 to 50 per cent in 1925. The agricultural depression with its inevitable deflation of purebred-cattle prices which has prevailed has discouraged the farmers from raising purebred stock. They raised sufficient purebred heifers to replace their cows but were not encouraged to raise young stock for sale, which is usually a very important branch enterprise in dairy farming with purebred stock.

NUMBER OF MEN PER FARM

The number of men, like the number of cows, increases with an increase in size of farm. On farms of 100 acres or less the number of men, including operator, averaged 1.8 per farm; on farms of more than 220 acres the average was 3.2 men per farm (table 3). There was a wide range in number of men per farm: one farmer operated his farm without any hired help; another kept six hired men thruout the year.

FARM RECEIPTS

TOTAL INCOME

Of the total income per farm, $7381, milk sales contributed $3427 in cash and $108 in certificates of indebtedness. Livestock sales amounted to $990, which together with livestock products, were 61.3 per cent of the farm income. Crop sales accounted for 24.9 per cent of the income, miscellaneous receipts for 8.9 per cent, and increase in inventory for 4.9 per cent. (Table 5.)

TABLE 5. AVERAGE RECEIPTS PER FARM

	Average per farm	Per cent of total
Crops sold	$1,837	24.9
Livestock sold	990	13.4
Milk sold:		
Wholesale	3,419	46.3
Retail	8	0.1
Certificates of indebtedness	108	1.5
Miscellaneous	656	8.9
Increase in inventory	363	4.9
Total	$7,381	100.0

CROPS

Crop sales amounted to $1837 per farm. On farms averaging 83.4 acres the receipts from crops averaged $630 per farm, or $16.36 per acre of crops (table 6). On farms averaging 295.9 acres the receipts were $2856 per farm, or $26.87 per acre of crops. The large farms had the highest income from crops per farm, but the group of farms averaging 161.0 acres had an income of $39.74 per acre of crops or $12.87 more per acre than the large farms.

TABLE 6. RELATION OF SIZE OF FARM TO CROP SALES PER FARM

	Acres per farm				
	100 and less	101 to 140	141 to 180	181 to 220	More than 220
Average acres in farm	83.4	123.1	161.0	201.9	295.9
Number of farms	18	33	27	14	22
Crop sales	$630	$1,267	$2,650	$1,563	$2,856
Crop sales per acre of crops	$16.36	$23.65	$39.74	$23.80	$26.87

The kinds of crops grown, the acres of those crops, the yields, and the total receipts are given in table 7. Of the 66 acres of crops per farm, 13.3 per cent was in corn, 14.9 per cent was in oats and barley, 10.9 per cent was in cash crops, and the remaining 60.9 per cent was in hay. More than one-half of the acreage in cash crops was used for peas.

TABLE 7. CROPS RAISED ON 114 FARMS

Kind of crop	Acres	Total yield	Unit	Operator's sales		Landlord's sales	
				Amount	Value	Amount	Value
Corn for grain	33	1,420	Bushels	.....	.....	.....	.....
Stover from corn for grain	.....	23	Tons	.....	.....	.....	.....
Stover bedding	.....	1	Ton	.....	.....	.....	.....
Corn for the silo	947	10,792	Tons	65	$ 260	.....	.....
Grain from corn for the silo	.....	75	Bushels	.....	.....	.....	.....
Corn for the silo sold standing	1	.....	.....	.....	15	.....	.....
Corn for fodder	11	43	Tons	.....	.....	.....	.....
Corn fed green	11.5	60	Tons	.....	.....	.....	.....
Sweet corn	0.5	71	.....	35	24	36	$ 24
Oats	433	17,317	Bushels	185	138	.....	.....
Oat straw	.....	387	Tons	7	50	2	8
Oats and barley	364	15,678	Bushels	415	260	150	90
Oat and barley straw	.....	291	Tons	18	64	.....	.....
Oats and peas	4	202	Bushels	.....	.....	.....	.....
Oat and pea straw	.....	4	Tons	.....	.....	.....	.....
Oats, peas, and barley	96	3,517	Bushels	.....	.....	.....	.....
Oat, pea, and barley straw	.....	33	Tons	2	25	.....	.....
Barley	132	4,477	Bushels	83	104	.....	.....
Barley straw	.....	94	Tons	3	20	.....	.....
Barley and buckwheat	4	92	Bushels	.....	.....	.....	.....
Barley and buckwheat straw	.....	4	Tons	.....	.....	.....	.....
Buckwheat	150	2,665	Bushels	750	469	53	50
Buckwheat double cropped	(8)*	190	Bushels	.....	.....	.....	.....
Buckwheat plowed under	2	.....	.....	.....	.....	.....	.....
Buckwheat pastured	(4)*	.....	.....	.....	.....	.....	.....
Buckwheat straw	.....	62	Tons	.....	.....	.....	.....
Buckwheat fed green	3	15	Tons	.....	.....	.....	.....
Winter wheat	97	3,181	Bushels	1,323	2,150	503	781
Winter-wheat straw	.....	69	Tons	.....	.....	.....	.....
Spring wheat	12	231	Bushels	.....	.....	.....	.....
Spring-wheat straw	.....	4	Tons	0.7	5	.....	.....
Oat and pea silage	16	48	Tons	.....	.....	.....	.....
Millet silage	2	13	Tons	.....	.....	.....	.....
Millet fed green	5	24	Tons	.....	.....	.....	.....
Rowen fed green	(27)*	36	Tons	.....	.....	.....	.....
Clover fed green	4	4	Tons	.....	.....	.....	.....
Clover fed green, second cutting	(10)*	15	Tons	.....	.....	.....	.....
Oats fed green	3	8	Tons	.....	.....	.....	.....
Oats and peas fed green	4	13	Tons	.....	.....	.....	.....
Peavines fed green	(13)*	16	Tons	.....	.....	.....	.....
Alfalfa fed green, first cutting	1	2	Tons	.....	.....	.....	.....
Alfalfa fed green, second cutting	(60)*	174	Tons	.....	.....	.....	.....
Alfalfa fed green, third cutting	(2)*	1	Ton	.....	.....	.....	.....
Timothy fed green	10	10	Tons	.....	.....	.....	.....
Alfalfa, first cutting	341	643	Tons	.....	.....	.....	.....
Alfalfa, second cutting	(188)*	207	Tons	.....	.....	.....	.....
Alfalfa, third cutting	(4)*	3	Tons	.....	.....	.....	.....
Mixed hay (clover)	1,161	2,360	Tons	135	1,507	.....	.....
Mixed hay (other)	2,066	3,423	Tons	150	1,744	35	351
Timothy	648	937	Tons	182	1,943	.....	.....
Rowen	(258)*	221	Tons	.....	.....	.....	.....
Rowen for bedding	(3)*	2	Tons	.....	.....	.....	.....
Peavines, cured	.....	7	Tons	.....	.....	.....	.....
Peavines for bedding	.....	2	Tons	.....	.....	.....	.....
Oat and pea hay	23	41	Tons	.....	.....	.....	.....
Millet hay	3	8	Tons	.....	.....	.....	.....
Oat hay	24	28	Tons	.....	.....	.....	.....
Pea hay	(3)*	2	Tons	.....	.....	.....	.....
Oat and buckwheat hay	14	28	Tons	.....	.....	.....	.....
Buckwheat hay	4	4	Tons	.....	.....	.....	.....
Potatoes	109.8	13,292	Bushels	7,539	16,840	453	761
Cabbage	280.2	2,771.5	Tons	2,551	39,452	188.5	2,477
Cabbage refuse	.....	252	Tons	.....	.....	.....	.....
Field beans	14.3	657.5	Bushels	482.5	805	108	156
Green beans	3.5	600	Bushels	400	400	200	150
Market peas	418.7	62,457	Bushels	50,272	107,714	9,377	22,609
Market peas, share from land rented out	(4)*	1,384	Bushels	692	942	.....	.....
Market peas, sold standing	13.5	.....	.....	.....	1,526	.....	106
Beets	3.3	54.5	Tons	2	30	.....	.....
Squash	4.3	37	Tons	37	536	.....	.....
Mangels	1.5	18	Tons	4	99	.....	.....
Cucumbers	12.2	957	Bushels	513	532	244	160
Turnips	1.3	2	Tons	2	50	.....	.....

* These acres are not included in the total acres of crops.

TABLE 7 (*concluded*)

Kind of crop	Acres	Total yield	Unit	Operator's sales		Landlord's sales	
				Amount	Value	Amount	Value
Carrots	0.3	7	Tons	7	130	.....	.....
Onions	0.5	8,000	Pounds	8,000	114	.....	.....
Hops	4.0	2,683	Pounds	2,683	1,342	.....	.....
Parsnips	0.1	.....	.....	.....	20	.....	.....
Strawberries	0.6	1,296	Quarts	696	195	600	150
Blackberries	0.5	1,000	Quarts	500	100	500	100
Black raspberries	0.5	650	Quarts	325	81	325	81
Apples	20.0	530	Bushels	179	267	100	125
Garden	2.0	.....	.....	.....	.....	.....	.....
1924 silage	.....	153	Tons	.....	.....	.....	.....
1924 hay	.....	102	Tons	47	591	7	70
1924 straw	.....	22	Tons	.....	.....	.....	.....
1924 popcorn	.....	485	Bushels	485	649	.....	.....
Total	7,521.1	.....	.....	.....	$181,193	.....	$28,249

The yields of crops in this community are normally higher than for the State as a whole. Furthermore, on account of the unusually favorable weather that prevailed in 1925, the yields of crops, especially peas, spring grain, and corn for the silo, were better than normal for the region. Details of the comparative yields of the same crops in New York State and in the region studied for the five years are given in table 8.

TABLE 8. YIELDS PER ACRE OF IMPORTANT CROPS

Crop	Unit	New York State average yield	Five-year average yield in region studied	1925		
				Actual yield in region studied	Per cent of	
					State average	Five-year simple average
Corn for the silo	Tons	6.2	11.8	11.4	183.9	96.6
Corn for grain	Bushels	36.8	46.2	43.0	116.8	93.1
Oats for grain	Bushels	31.6	35.4	40.0	126.7	113.0
Oats for hay	Tons	1.5	1.4	1.2	80.0	85.7
Oats and barley for grain	Bushels	31.1	41.5	43.1	138.6	103.9
Barley	Bushels	26.7	32.5	33.9	127.0	104.3
Buckwheat	Bushels	20.3	20.5	17.9	88.2	87.3
Winter wheat	Bushels	19.5	28.1	32.8	168.2	116.7
Alfalfa cured, first cutting	Tons	2.0	1.9	1.9	95.0	100.0
Alfalfa cured, second cutting	Tons	.....	1.0	1.0	.....	100.0
Alfalfa cured, third cutting	Tons	.....	0.8	0.8	.....	100.0
Mixed hay	Tons	1.3	1.5	1.7	128.8	113.3
Timothy	Tons	1.3	1.7	1.4	106.1	82.4
Potatoes	Bushels	112.0	127.8	121.1	108.1	94.8
Cabbage	Tons	9.0	10.4	9.9	110.0	95.2
Market peas	Bushels	79.2	139.2	149.2	188.4	107.2
Weighted crop index compared with state average					149.8	

Not only were the yields of peas, cabbage, and potatoes good but the prices for these crops relative to prices for other farm products were high in the year covered by the study. The index number of the prices of market peas in New York City ranged from 195 to 221 in different months of the shipping season (table 9). This was much higher than wholesale prices of all commodities in the United States, which ranged from 154 to 164, or of all farm products, which ranged from 147 to 171. For the greater

part of the season, cabbage prices were more than twice as high as wholesale prices of all commodities or of all farm products. Potato prices were still higher and averaged 330 per cent of pre-war prices for the months of October to February inclusive (table 9).

TABLE 9. INDEX NUMBERS OF PRICES PAID TO NEW YORK PRODUCERS COMPARED WITH THE GENERAL PRICE LEVEL

(Average of each product 1910–1914=100)

	Milk	Potatoes	Cabbage	Market peas ‡	Hay	Milk cows	All farm products	Wholesale prices of all United States commodities
1925:*								
May	180	.....	.....	.....	76	139	150	158
June	192	.....	.....	195	74	135	157	161
July	167	.....	.....	221	77	143	150	163
August	156	.....	.....	200	89	137	156	164
September	155	.....	.....	209	87	147	148	163
October	143	188	340	.....	89	144	147	161
November	141	384	385	.....	91	147	165	161
December	140	341	380	.....	94	145	159	159
1926:†								
January	139	381	.....	.....	94	154	158	159
February	141	355	.....	.....	91	155	156	158
March	147	.....	.....	.....	91	150	158	154
April	162	.....	.....	.....	91	159	171	154

* Farm Economics (Cornell University) no. 31, pages 369, 372, and 373.
† Farm Economics (Cornell University) no. 41, pages 581, 586, and 587.
‡ The production and marketing of New York market peas. By Dilworth Walker. Cornell Univ. Agr. Exp. Sta. Bulletin 475. 1929.

The good prices for crops sold, combined with good yields and slightly higher milk prices, made it possible for the farmers to realize a fair return for their labor, above interest on their capital, for the first time in the five years of the study, which was begun in 1921, the first year after prices fell so sharply following the World War.

LIVESTOCK AND LIVESTOCK PRODUCTS

For the fiscal year studied, the index number of the price of milk averaged 155 and the general price level in the United States was 160. The price of cows averaged 146.

Of the sale of livestock and their products, 78.3 per cent came from milk sold and 21.7 per cent from the sale of livestock. The variation in the percentage of the receipts from livestock products that comes from milk and from stock depends on the grade of cows kept and the percentage of herd replaced during the year. Farmers that keep purebred herds sell more cattle than do farmers that keep grade cows. Many farmers also tested their herds for tuberculosis during the year and the percentage of the income from dairy herds was higher than would normally be the case.

The farms keeping small herds were able to maintain a better herd. On farms with 16 cows and less, the production per cow averaged 7500 pounds

per cow (table 11). On farms keeping 17 to 25 cows, the production was 6700 pounds per cow.

Farmers in this region attempt to have most of their cows freshen in the fall, in order to sell the maximum amount of milk at the time of highest prices. From October 30 to May 15, 61.5 per cent of the milk was pro-

TABLE 10. RELATION OF SIZE OF FARM TO RECEIPTS FROM MILK SOLD

	Acres per farm				
	100 and less	101 to 140	141 to 180	181 to 220	More than 220
Average acres in farm	83.4	123.1	161.0	201.9	295.9
Number of farms	18	33	27	14	22
Value of milk sold wholesale	$2,396	$2,988	$3,538	$3,611	$5,193
Value of milk sold wholesale per cow	$164	$152	$160	$156	$158

TABLE 11. RELATION OF SIZE OF DAIRY HERD TO OTHER FACTORS

Number of cows	Hundred pounds of milk per cow	Per cent of cows freshening from September to December, inclusive	Man equivalent
16 cows and less	75	51	2.0
17 to 25 cows	67	48	2.2
More than 25 cows	71	50	3.0

TABLE 12. DISTRIBUTION OF MILK PRODUCTION, 114 FARMS

	Total pounds of milk sold wholesale	Per cent	Butter-fat test	Value per farm including certificates of indebtedness
1925:				
May	1,756,048	10.4	3.34	$326
June	1,702,843	10.0	3.35	302
July	1,318,757	7.8	3.41	250
August	1,105,553	6.6	3.44	234
September	1,100,374	6.5	3.47	243
October	1,237,224	7.3	3.49	282
November	1,280,825	7.6	3.40	297
December	1,427,400	8.4	3.37	329
1926:				
January	1,474,498	8.7	3.35	338
February	1,347,011	8.0	3.37	302
March	1,567,670	9.3	3.37	336
April	1,598,626	9.4	3.38	328
Total	16,916,829	100.0	3.39	$3,567*
Total pasture	6,508,326	38.5	3.41	$1,289
Total winter	10,408,503	61.5	3.38	2,278

* Also $8 receipts from retail milk and butter sold, making total receipts from milk products $3575 per farm.

duced. The highest production was in the months of May, June, and July, immediately after the cows were turned out on pasture (table 12). During these three months 28.2 per cent of the milk was produced. The lowest production was in August, September, and October, just before fall freshening.

MISCELLANEOUS RECEIPTS

Miscellaneous receipts were 8.9 per cent of the total income. The most important item was egg sales. Of the $656 miscellaneous income per farm, $453 came from the sale of eggs (table 13). Labor off the farm and income from other occupations amounted to $83 per farm. The remaining $120 was spread over a large number of items.

TABLE 13. MISCELLANEOUS RECEIPTS, 114 FARMS

	Amount	Value		
		Farm	Operator	Landlord
Man labor off farm	1,080 days	$ 4,737	$ 4,606	$ 131
Horse labor off farm	604 days	1,152	1,083	69
Use of machinery	148 days	944	941	3
Miscellaneous part-time occupations	.....	4,716	4,716	.....
Rent of lodgings	.....	400	400	.....
Rent of house	.....	20	20	.....
Rent of land	.....	77	77	.....
Rent of pasture	50 acres	375	358	17
Wood	641 cords	2,340	2,269	71
Maple sirup	595 gallons	1,227	1,172	55
Maple sugar	545 pounds	191	191	.....
Honey	733 pounds	150	87	63
Wool	377 pounds	173	173	.....
Eggs	143,888 dozen	51,679	49,887	1,792
Breeding fees	.....	291	285	6
Feed bags	16,417	741	711	30
Hides	20	54	44	10
Lumber	85.9 thousand feet	1,705	1,688	17
Posts	667	60	60	.....
Gravel	855 yards	253	253	.....
Hauling milk	.....	786	786	.....
Ice	27,843 cakes	1,112	1,112	.....
Cabbage plants	85,000	120	120	.....
Fair premiums	.....	366	366	.....
Other miscellaneous	.....	1,086	1,086	.....
Total	.....	$74,755	$72,491	$2,264

FARM EXPENSES

The total expenses per farm, not including cash rent and new buildings, amounted to $4145 (table 14). Feed purchased for cattle was 26.6 per cent of this amount, while horse, poultry, and hog feed purchased and grinding feed was 6.1 per cent. The feed purchased, therefore, amounted to about one-third of the total farm expenses.

TABLE 14. EXPENSES ON 114 FARMS

Kind	Value		
	Total	Per farm	Per cent
Labor, hired	$ 83,189	$ 730	17.6
Labor, unpaid	31,268	274	6.6
Board of hired help	13,274	116	2.8
Barrels, baskets, egg cases	10,739	94	2.3
Bedding	107	1	0.0
Breeding	153	1	0.0
Building repairs	6,806	60	1.4
Pasturage	1,216	11	0.3
Commissions, storage	12,923	113	2.7
Freight and express	18,546	163	3.9
Salt	585	5	0.1
Electricity	2,953	26	0.6
Hay, silage	1,170	10	0.2
Cattle feed	125,860	1,104	26.6
Horse feed	4,686	41	1.0
Hog and poultry feed	22,485	197	4.8
Grinding feed	1,357	12	0.3
Fencing	1,610	14	0.3
Fertilizer	10,643	93	2.3
Lime	2,594	23	0.6
Baling	474	4	0.1
Horseshoeing	3,720	33	0.8
Insurance	5,865	51	1.2
Sawing lumber	754	7	0.2
Machinery, new	22,913	201	4.9
Machinery, repairs	5,637	49	1.2
Machinery, hired	705	6	0.2
Filling silo	2,468	22	0.5
Threshing	2,792	24	0.6
Coal, oil, and gasoline	8,005	70	1.7
Twine	1,248	11	0.3
Farm share of upkeep and operation of automobile	7,361	65	1.6
Ice, and sawdust for ice	463	4	0.1
Hauling milk	1,367	12	0.3
Milk bottles, cans, and strainers	823	7	0.2
Cow tester, acids, fees	771	7	0.2
Registration fees	759	7	0.2
Grass seeds	5,027	44	1.1
Other seeds	10,621	93	2.2
Spray materials	599	5	0.1
Stamps and stationery, for farm use	228	2	0.0
Telephone, farm use	2,063	18	0.4
Advertising	13	.....	0.0
Taxes, school	9,244	81	2.0
Taxes, general	18,637	164	3.9
Veterinary, medicine, etc	2,014	18	0.4
Drains	91	1	0.0
Certification	65	1	0.0
All other farm expenses	5,688	50	1.2
Total (except cash rent and new buildings)	$472,579	$4,145	100.0
Cash rent	$4,422	.....	.....
New buildings	7,825	69	.....
Total	$484,826	$4,214	.....
Livestock purchased	$79,048	$693	.....
Total except cash rent	$559,452	$4,907	.....

The labor charge was 27.0 per cent of the total. Hired labor amounted to 17.6 per cent, unpaid labor to 6.6 per cent, and board of hired help to 2.8 per cent of all expenses.

Machinery repairs and new machinery were 6.1 per cent and taxes 5.9 per cent of the total expense. The remaining 28.3 per cent of the expenses was distributed over a large number of items.

As the feed and labor bills on farms make up 60 per cent of all expenses, good feeding practices and efficient use of labor will reduce farm expenses and increase the farmer's net return.

LABOR INCOMES AND RETURN ON CAPITAL

The total receipts on these farms, including cash rent, were $7420, and the total expenses, including livestock purchased and cash rent, $4946. The difference, or farm income, was thus $2474. Deducting 5 per cent interest on capital ($798), the labor income amounts to $1676. The labor income averaged $321 in 1921, $32 in 1922, $383 in 1923, and $489 in 1924. In 1925 returns were better than in any previous year studied.

Farmers estimated their time to be worth $1068. This amount deducted from the farm income of $2474, leaves $1406, or 8.8 per cent on the capital.

On individual farms there was a wide variation in labor incomes. One farmer made a labor income of $11,948. Another farmer was $76 short of expenses other than interest, that is, he made a labor income of −$1697. Altho 21 farms failed to make interest, 18 made labor incomes of more than $3000 after deducting all expenses including interest on capital (table 15).

The largest number of farms made labor incomes between $1000 and $2000.

TABLE 15. VARIATIONS IN LABOR INCOMES ON 114 FARMS, AND RELATION OF COST OF MILK AND CROP SALES TO LABOR INCOME

	Number of farms making labor incomes as designated				
	Minus $1 and less	0 to plus $999	Plus $1,000 to $1,999	Plus $2,000 to $2,999	Plus $3,000 and more
Number of farms	21	25	33	17	18
Per cent of total	18	22	29	15	16
Labor income	−$458	$521	$1,466	$2,486	$5,391
Crop sales	$444	$698	$1,357	$1,269	$6,461
Cost of milk	$3.29	$2.59	$2.43	$2.09	$2.00

FACTORS INFLUENCING LABOR INCOME

PERCENTAGE OF INCOME FROM CROPS SOLD, AND COST OF MILK SOLD

In 1925 there were two factors that greatly influenced labor income: the percentage of income derived from crop sales and the cost of milk sold. As the crop sales increased and the cost of milk decreased, the labor income increased. This is illustrated graphically in figure 1. The coefficient of

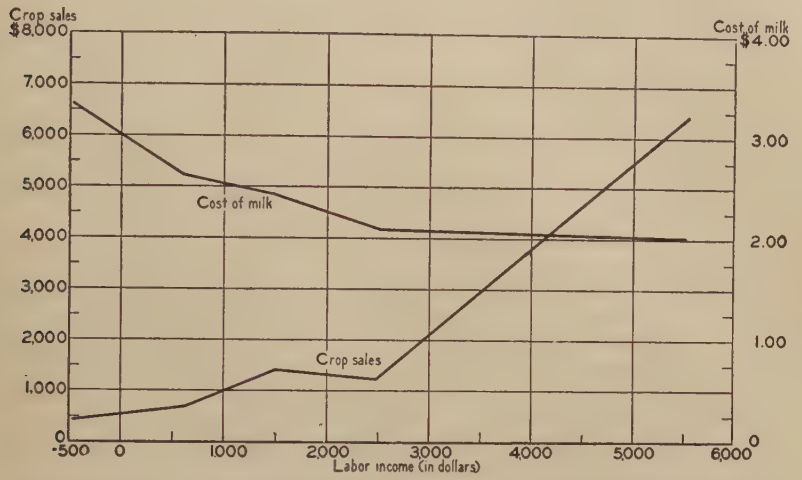

FIGURE 1. HIGH LABOR INCOMES ARE CLOSELY ASSOCIATED WITH LOW COST OF MILK AND A LARGE INCOME FROM CROPS SOLD

correlation between labor income and percentage of income from crops was +0.62 and between labor income and cost per 100 pounds of milk sold −0.37. The pounds of milk produced per cow only indirectly influenced the labor income by lowering the cost of milk. This slight influence is indicated by the correlation between labor income and pounds of milk sold per cow, +0.21.

This relationship is not linear. As the percentage of income derived from crops sold increased, the labor income increased at a much faster rate (figure 2). This is the normal relationship that exists in a year when crop yields are unusually good and crop prices are unusually high. The more crops that were sold at good prices, the greater was the profit. Such unusual combinations of yields and prices are very rare. On the other hand, the labor income increased progressively with a decrease in the cost of milk (figure 3).

SIZE OF BUSINESS

Another factor that greatly influenced labor income was the size of the farm business. In a year of good prices it pays to have a large business. On the farms that averaged 83.4 acres the labor income was $927; on those that averaged 295.9 acres the labor income was $2787 (table 16).

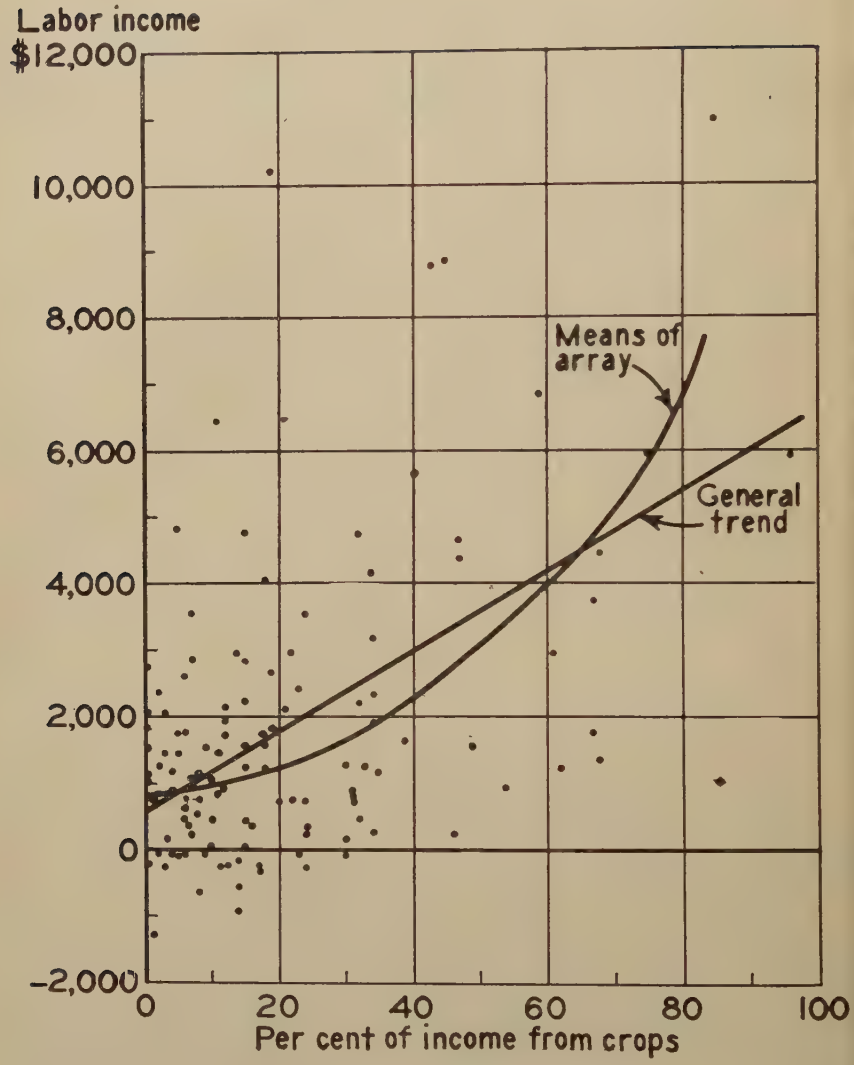

FIGURE 2. RELATION OF INCOME DERIVED FROM CROPS SOLD TO LABOR INCOME

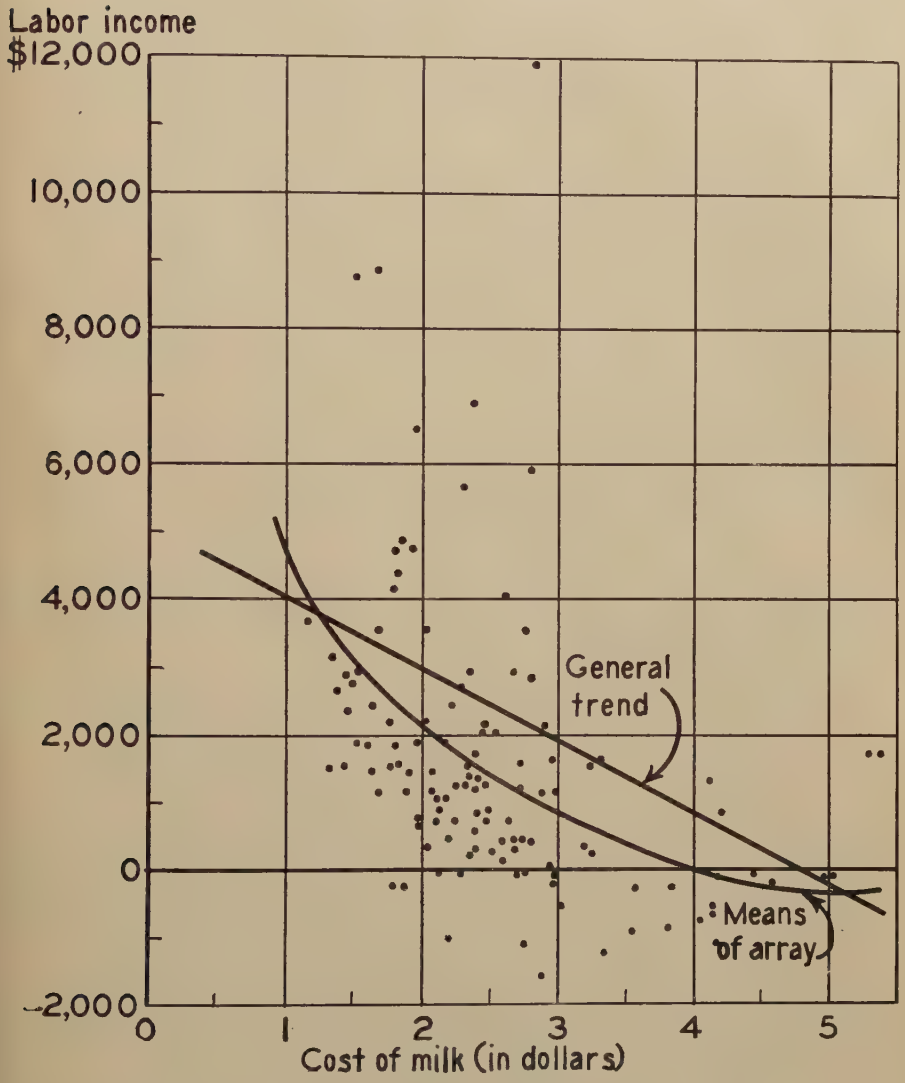

FIGURE 3 RELATION OF COST OF MILK TO LABOR INCOME

For the 1925 crop year, the size of the pea enterprise had a striking influence on labor income. Farms averaging 161 acres had 6.4 acres of peas and made a labor income of $1595; farms averaging 201.9 acres had 2.3 acres of peas and made a labor income of only $1490 (table 16).

TABLE 16. RELATION OF SIZE OF FARM TO LABOR INCOME AND TO OTHER FACTORS

	Variation in acres per farm				
	100 and less	101 to 140	141 to 180	181 to 220	More than 220
Average acres in farms	83.4	123.1	161.0	201.9	295.9
Number of farms	18	33	27	14	22
Capital per farm	$10,300	$13,800	$16,200	$15,400	$23,800
Man equivalent	1.8	2.0	2.6	2.3	3.2
Number of cows	14	20	22	23	33
Number of hens	137	137	105	128	260
Acres of peas	1.3	2.5	6.4	2.3	5.7
Per cent of cows freshening from September to December, inclusive	50	49	55	42	48
100 pounds milk produced per cow	77	67	72	69	70
Labor income	$927	$1,490	$1,595	$1,490	$2,787

If capital per farm is taken as a composite measure of the size of the business, the labor income increased with an increase in capital per farm (figure 4). The relationship again was not linear. The proportion of

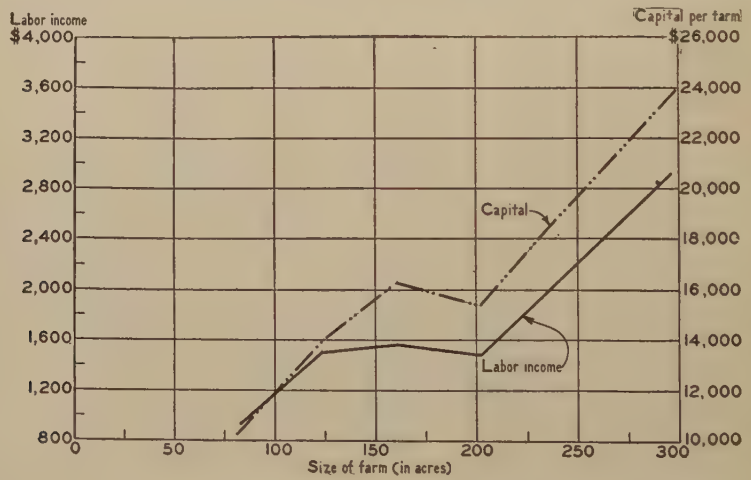

FIGURE 4. RELATION OF SIZE OF FARM TO CAPITAL AND TO LABOR INCOME (114 farms, 1925)

factors came into effect, and after capital per farm reached $30,000 the tendency was for labor income to decrease with an increase in capital (figure 5).

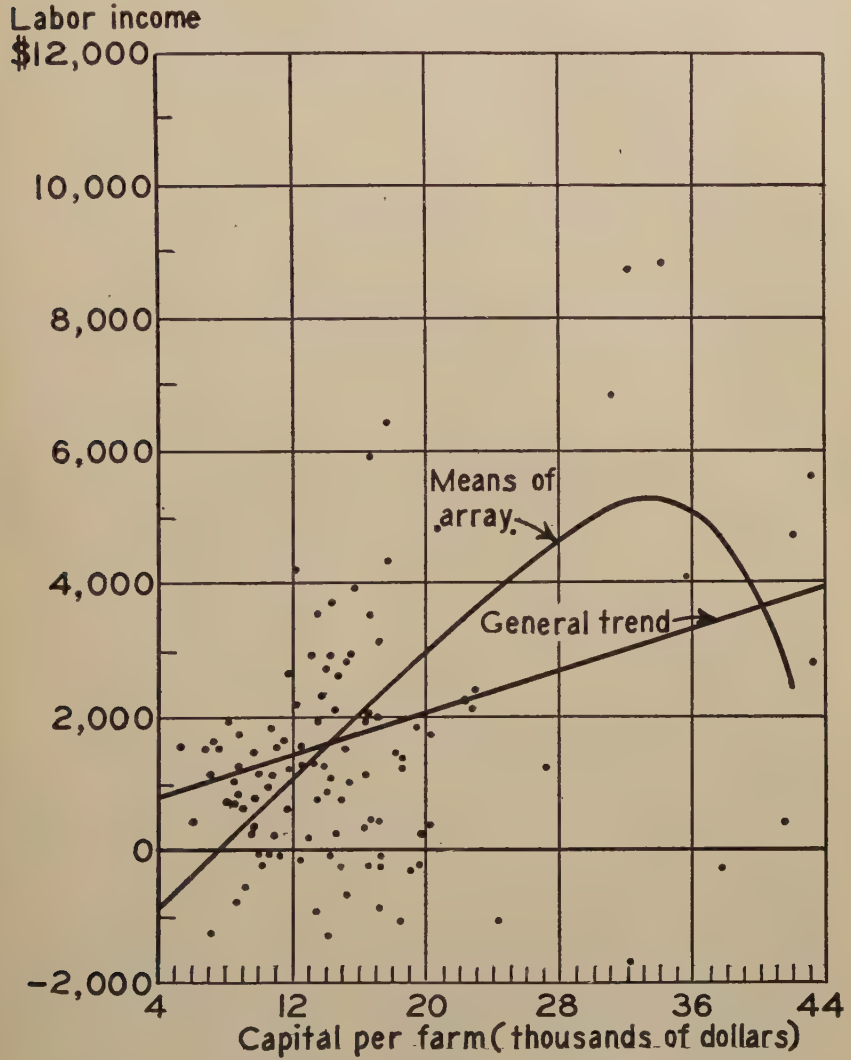

FIGURE 5. RELATION OF CAPITAL PER FARM TO LABOR INCOME
(114 farms, 1925)

DAIRY ENTERPRISE

COST OF PRODUCING MILK

The average cost of keeping a cow was $181.19, or $2.74 per 100 pounds of milk sold wholesale (table 17). When the returns other than milk sold wholesale are deducted from the total expenses, the cow cost of milk sold wholesale is reduced to $153.89 per cow, or $2.32 per 100 pounds of milk. The returns, including cash and certificates of indebtedness, were $2.37 per 100 pounds of milk. This gave a net gain of 5 cents on 100 pounds of milk sold wholesale.

Labor was 26.3 per cent of the cost of producing milk; hauling milk was 5.2 per cent.

All other expense, including use of buildings and equipment, and interest and depreciation on cows, amounted to 13 per cent of the total cost.

TABLE 17. SUMMARY OF COSTS AND RETURNS FOR 2556 COWS

	Per farm	Per cow	Per 100 pounds of milk sold wholesale
Costs:			
Concentrates	$1,087	$48.49	$0.74
Succulent feed	485	21.61	0.33
Dry forage	512	22.83	0.34
Pasture	172	7.66	0.12
Bedding	29	1.31	0.02
Human labor	998	44.52	0.67
Horse labor	73	3.26	0.05
Hauling milk	213	9.50	0.14
Use of buildings	139	6.18	0.09
Use of equipment	17	0.77	0.01
Interest on cows	156	6.98	0.11
Depreciation on cows	48	2.17	0.03
Bull service	59	2.62	0.04
Miscellaneous	74	3.29	0.05
Total	$4,062	$181.19	$2.74
Returns:			
Milk sold wholesale:			
Cash	$3,419	$152.47	$2.30
Certificates of indebtedness	107	4.80	0.07
Milk retailed and milk products sold	8	0.37	.....
Milk and milk products used on farm	202	9.02	0.14
Calves born during year	112	5.01	0.08
Manure	280	12.48	0.19
Miscellaneous	10	0.42	0.01
Total	$4,138	$184.57	$2.79
Gain	$76	$3.38	$0.05
Cow cost of producing milk	$3,450	$153.89	$2.32
Cow cost per pound of butterfat	.....	.....	$0.69

Variation in the cost of producing milk

The cost of producing milk varied from $1.15 to $5.38 per 100 pounds of milk sold. Seventeen farms produced milk for less than $1.75 per 100 pounds; on 16 farms the cost was more than $3.26 (table 18). The greater number of farms had a cost of less than $2.75 per 100 pounds of milk.

TABLE 18. VARIATION IN THE COST OF PRODUCING MILK

	Number of farms with cow cost per 100 pounds of milk sold wholesale as designated					
	$1.75 and less	$1.76 to $2.25	$2.26 to $2.75	$2.76 to $3.25	$3.26 and over	Total
Number of farms	17	32	33	16	16	114
Per cent	15	28	29	14	14	100

Feed used

Feed was the most important item of expense. All feed, including concentrates, succulent feed, dry forage, and pasture, was 55.5 per cent of the cost of keeping a cow.

The pounds of feed used are given in table 19.

TABLE 19. AMOUNTS OF FEED USED PER COW AND PER UNIT OF PRODUCT

	Pounds	
	Per cow *	Per 100 pounds of milk produced †
Concentrates	2,296	32.8
Silage	7,467	106.5
Other succulent feed	587	8.4
Hay	3,897	55.6
Other dry forage	56	0.8

*2,556 cows.
†169,168 hundredweight of milk.

On the average, the cows consumed 2296 pounds of concentrates and 12,007 pounds of roughage. This amounted to 32.8 pounds of concentrates and 171.3 pounds of roughage per 100 pounds of milk sold.

FARM PRACTICES

FERTILITY MAINTENANCE

The net gain on the dairy enterprise was small, approximately $76 per farm. The greatest value of the dairy enterprise was, therefore, as a center around which the system of Grade B milk with mixed hay and cash crops could be organized. Altho the greater portion of the crops is produced to maintain the dairy herd, the dairy herd in turn helps to maintain the soil fertility so necessary for the continued production of good yields of crops to be sold.

The kinds of fertilizer used, the acres fertilized, the pounds of fertilizer used per acre, and the cost of fertilizer are given in table 20.

The five most important kinds of fertilizer used are 2–8–10, superphosphate, 4–8–7, 2–8–4, and 4–8–4. They made up respectively 27, 25, 7, 6, and 6 per cent of the total commercial fertilizer used. The remaining 29 per cent was distributed among twenty-six kinds of fertilizer.

In addition to the commercial fertilizers a large quantity of lime and manure was used in maintaining soil fertility. A summary of the fertilizer and lime used is given in table 21.

The old meadow used for hay received an average of 8.46 tons of manure per acre; new seedings received 10.15 tons per acre, and corn for the silo

TABLE 20. SUMMARY OF FERTILIZER AND LIME USED ON 114 FARMS

Forms of fertilizer and lime	Number of farms using	Acres fertilized	Total pounds used	Pounds used per acre fertilized	Cost of fertilizer
Corn for the silo:					
Superphosphate	14	141.5	33,775	239	$357
0–10–10	1	3.0	1,000	333	16
1–8–4	2	14.0	3,800	271	54
2–4–6	1	10.0	1,600	160	30
2–8–3	2	21.0	6,700	319	135
2–8–4	5	39.5	9,660	245	163
2–8–5	1	8.0	3,000	375	52
2–8–6	3	24.0	7,000	292	135
2–8–10	17	112.4	44,500	396	806
2–12–2	1	11.0	3,000	273	53
2–12–5	1	13.0	3,900	300	43
3–6–7	1	6.0	10,000	1,667	150
3–8–4	2	17.0	3,950	232	63
3–8–6	1	10.0	3,000	300	57
3–8–7	1	12.0	5,700	475	104
4–8–4	3	23.0	6,475	282	129
4–8–7	4	37.0	11,300	305	220
4–8–10	2	13.0	3,400	262	70
5–8–5	1	6.0	1,800	300	31
Kind not found	1	10.0	1,700	170	38
Total fertilizer	60	531.4	165,260	311	$2,706
Ground limestone	4	26.0	74,000	2,846	$141
Corn for grain:					
3–8–7	1	1.0	500	500	$9

TABLE 20 (*continued*)

Forms of fertilizer and lime	Number of farms using	Acres fertilized	Total pounds used	Pounds used per acre fertilized	Cost of fertilizer
Oats:					
Superphosphate	12	79.0	17,731	224	$191
0–10–10	1	8.0	1,400	175	25
0–12–5	1	6.0	1,800	300	25
1–8–4	2	9.0	1,800	200	26
2–8–2	2	12.0	2,200	183	37
2–8–4	2	11.5	4,225	367	72
2–8–6	2	21.0	4,200	200	83
2–8–10	8	78.0	15,745	202	287
3–8–7	1	5.0	800	160	14
4–8–7	3	16.5	2,800	170	57
4–8–10	2	18.0	3,600	200	72
Kind not found	1	9.0	4,000	444	76
Total fertilizer	35	273.0	60,301	221	$965
Ground limestone	21	184.0	308,000	1,674	$685
Barley:					
Superphosphate	5	34.0	5,800	171	$ 61
0–10–10	1	10.0	2,000	200	33
2–8–3	1	20.0	2,000	100	38
2–8–6	1	2.0	300	150	6
2–8–7	1	.....	250	.....	4
2–8–10	5	33.0	8,290	251	144
2–12–2	1	16.0	6,000	375	101
Kind not found	1	13.0	1,300	100	30
Total fertilizer	13	128.0	25,940	203	$417
Ground limestone	3	41.0	60,550	1,477	$151
Oats and barley:					
Superphosphate	9	91.5	18,700	204	$204
2–8–10	2	14.0	3,400	243	59
2–12–2	1	5.0	625	125	10
Total fertilizer	12	110.5	22,725	206	$273
Ground limestone	4	46.0	40,000	870	$91
Oats and peas:					
Ground limestone	1	2.0	6,000	300	$16
Oats and peas for silo:					
2–8–5	1	16.0	3,000	188	$52
Buckwheat:					
Superphosphate	5	78.0	16,400	210	$159
0–10–10	1	4.0	600	150	10
2–8–10	4	23.0	3,600	157	67
Kind not found	1	4.0	800	200	19
Total fertilizer	11	109.0	21,400	196	$255
Ground limestone	1	1.0	2,500	2,500	$8
Barley and buckwheat:					
2–12–2	1	4.0	625	156	$10

TABLE 20 (*continued*)

Forms of fertilizer and lime	Number of farms using	Acres fertilized	Total pounds used	Pounds used per acre fertilized	Cost of fertilizer
Wheat:					
Superphosphate	4	22.0	5,630	256	$ 56
2–8–4	1	5.0	1,000	200	15
2–8–10	5	36.0	7,530	209	127
Total fertilizer	9	63.0	14,160	225	$198
Ground limestone	4	36.0	46,500	1,292	$121
Oats, peas, and barley:					
Superphosphate	3	38.0	10,000	263	$104
Ground limestone	1	10.0	33,300	3,330	$60
Alfalfa:					
Ground limestone	6	26.0	40,000	1,538	$119
Mixed hay (clover):					
Ground limestone	8	77.0	116,000	1,506	$251
Oat and pea hay:					
Ground limestone	1	1.0	2,000	2,000	$5
Mixed hay (other):					
Ground bone	1	15.0	4,000	267	$30
Ground limestone	2	12.0	22,000	1,833	$64
Meadow:					
Ground limestone	2	52.0	93,500	1,798	$121
Beets:					
Nitrate of soda	1	1.0	100	100	$ 5
Superphosphate	1	1.0	400	400	4
2–8–10	1	0.5	250	500	5
4–8–7	2	1.5	1,300	867	24
4–8–10	1	0.5	500	1,000	10
Total fertilizer	5	4.5	2,550	567	$48
Potatoes:					
Superphosphate	6	17.55	9,350	533	$ 85
1–8–4	1	0.3	270	900	4
2–4–6	1	1.0	400	400	8
2–8–3	1	0.5	300	600	6
2–8–4	3	4.5	2,060	458	38
2–8–5	1	1.0	500	500	9
2–8–6	1	1.0	150	150	3
2–8–10	20	35.9	25,715	716	474
3–8–3	1	0.5	500	1,000	10
3–8–4	1	0.5	500	1,000	8
3–8–6	1	4.0	2,000	500	38
3–8–7	1	0.5	200	400	5
4–8–4	6	8.25	9,250	1,121	154
4–8–7	4	1.6	1,400	875	29
4–8–10	2	2.0	800	400	17
5–8–5	1	12.0	6,000	500	102
Kind not found	2	1.7	1,300	765	29
Stockbridge manure	1	1.2	1,000	833	22
Total fertilizer	50	94.0	61,695	656	$1,041

TABLE 20 (*continued*)

Forms of fertilizer and lime	Number of farms using	Acres fertilized	Total pounds used	Pounds used per acre fertilized	Cost of fertilizer
Peas:					
Superphosphate	9	47.0	11,550	246	$115
0–8–4	1	1.0	400	400	7
0–12–5	1	4.0	1,200	300	17
1–8–4	2	7.5	2,550	340	35
2–8–2	1	4.0	800	200	13
2–8–3	1	2.0	200	100	4
2–8–4	3	63.0	17,550	279	329
2–8–5	1	25.0	5,500	220	96
2–8–6	1	14.0	5,600	400	109
2–8–10	21	90.25	40,450	448	732
2–12–2	1	20.0	6,000	300	101
2–12–5	1	11.0	2,700	245	29
3–8–4	1	1.5	800	533	12
3–8–6	1	5.0	2,500	500	48
3–10–6	1	6.0	2,000	333	42
4–8–4	4	72.5	16,400	226	293
4–8–7	3	16.0	5,350	334	110
4–8–10	2	30.0	5,000	167	108
Kind not found	1	3.0	3,000	1,000	41
Farmers' Favorite	1	4.0	800	200	15
Total fertilizer	51	426.75	130,350	305	$2,256
Ground limestone	10	39.5	64,500	1,633	$171
Hydrated lime	2	31.0	30,025	969	$108
Cabbage:					
Nitrate of soda	1	5.0	310	62	$ 16
Superphosphate	15	61.5	30,900	502	300
1–8–4	1	4.0	2,800	700	35
2–8–3	1	4.0	1,600	400	34
2–8–4	5	15.0	7,520	501	140
2–8–6	2	6.0	1,750	292	33
2–8–10	16	76.3	26,800	351	479
2–12–5	1	5.0	3,000	600	33
3–8–4	1	3.0	1,500	500	24
3–8–6	1	3.5	1,700	486	32
3–8–7	1	2.0	1,800	900	43
3–10–5	1	9.0	4,000	444	69
3–10–6	1	5.0	2,000	400	42
4–8–4	6	13.7	6,600	482	134
4–8–7	6	32.5	20,900	643	401
4–8–10	1	3.5	1,200	343	26
5–8–5	1	7.0	2,800	400	48
5–10–5	1	9.5	8,375	882	188
Kind not found	1	1.0	1,000	1,000	23
Stockbridge manure	1	1.2	1,000	833	22
Total fertilizer	58	267.7	127,555	476	$2,122
Ground limestone	17	75.8	147,650	1,948	$353

TABLE 20 (*concluded*)

Forms of fertilizer and lime	Number of farms using	Acres fertilized	Total pounds used	Pounds used per acre fertilized	Cost of fertilizer
Beans:					
2–8–4	2	2.5	575	230	$11
2–8–10	1	1.0	250	250	4
Total fertilizer	3	3.5	825	236	$15
Cucumbers:					
0–8–10	1	0.5	.....	.....	$28
4–8–4	1	2.0	1,000	500	18
4–8–7	1	0.2	500	2,500	9
4–8–10	2	0.5	500	1,000	10
Total fertilizer	5	3.2	2,000	625	$65
Turnips:					
5–8–5	1	1.0	400	400	$7
Onions:					
4–8–7	1	0.5	1,000	2,000	$21
Truck:					
Superphosphate	1	2.0	4,000	2,000	$40
Other used:					
1–8–4	....	.....	750	.....	$9
Manure:					
Ground limestone	2	.....	20,000	.....	$67
Not used:					
Ground limestone	2	.....	28,000	.....	$62

received 12.92 tons per acre. Of all the manure applied, 48.4 per cent was used for hay and 32.8 per cent for corn for silage.

TABLE 21. TOTAL FERTILIZER AND LIME USED ON 114 FARMS

Forms of fertilizer and lime	Pounds used	Per cent of total	Cost of fertilizer and lime	Average price per ton
Nitrate of soda	410	0.1	$ 21	$102.44
Superphosphate	164,236	24.9	1,676	20.41
0–8–4	400	0.0	7	35.00
0–8–10	.....	.....	28	.....
0–10–10	5,000	0.8	84	33.60
0–12–5	3,000	0.5	42	28.00
1–8–4	11,970	1.8	162	27.07
2–4–6	2,000	0.3	38	38.00
2–8–2	3,000	0.4	50	33.33
2–8–3	10,800	1.6	217	40.19
2–8–4	42,590	6.5	768	36.06
2–8–5	12,000	1.8	209	34.83
2–8–6	19,000	2.9	369	38.84
2–8–7	250	0.0	4	32.00
2–8–10	176,530	26.7	3,184	36.07
2–12–2	16,250	2.5	275	33.85
2–12–5	9,600	1.5	105	21.88
3–6–7	10,000	1.5	150	30.00
3–8–3	500	0.1	10	40.00
3–8–4	6,750	1.0	107	31.70
3–8–6	9,200	1.4	175	38.04
3–8–7	9,000	1.4	175	38.89
3–10–5	4,000	0.6	69	34.50
3–10–6	4,000	0.6	84	42.00
4–8–4	39,725	6.0	728	36.65
4–8–7	44,550	6.8	871	39.10
4–8–10	15,000	2.3	313	41.73
5–8–5	11,000	1.7	188	34.18
5–10–5	8,375	1.3	188	44.89
Kinds not found	15,900	2.4	315	39.62
Ground bone	4,000	0.6	30	15.00
Total fertilizer	659,036	100.0	$10,642	$32.30
Ground limestone	1,104,500	.....	$2,486	$4.50
Hydrated lime	30,025	.....	$108	$7.19

TABLE 22. USE OF MANURE ON 114 FARMS

	Number of farms using	Acres manured	Tons applied	Tons per acre manured	Per cent of tons applied
Corn for grain	5	12.0	111	9.25	0.4
Corn for silage	87	744.5	9,619	12.92	32.8
Oats	7	41.0	361	8.80	1.2
Oats and barley	4	27.0	288	10.67	1.0
Barley	3	12.0	128	10.67	0.4
Buckwheat	2	8.0	160	20.00	0.5
Wheat	4	11.5	138	12.00	0.5
Market peas	14	59.0	968	16.41	3.3
Hay, new seeding	15	131.0	1,330	10.15	4.5
Hay, old meadows	92	1,521.0	12,870	8.46	43.9
Cabbage	49	138.5	2,844	20.53	9.7
Potatoes	20	31.3	372	11.88	1.3
Miscellaneous crops and vegetables	8	14.5	144	9.93	0.5
Total	.....	2,751.3	29,333	10.66	100.0
Not used	.....	.....	66	.....	.....

LABOR REQUIREMENTS

Productive man work units per man did not vary much up to farms 161 acres in size but on larger farms the labor was used more efficiently. On farms 161 acres in size 261 productive units of work were done per man, on farms 295.9 acres in size 302 units were done per man. (Table 23.)

The productive horse work units increased directly with an increase in size of farm.

TABLE 23. WORK UNITS ON FARMS OF DIFFERENT SIZE

	Acres per farm				
	100 and less	101 to 140	141 to 180	181 to 220	More than 220
Average acres in farms	83.4	123.1	161.0	201.9	295.9
Number of farms	18	33	27	14	22
Productive man work units	399	522	679	629	968
Man equivalent	1.8	2.0	2.6	2.3	3.2
Productive man work units per man	222	261	261	274	302
Productive horse work units	153	213	265	251	399

BUSINESS SUMMARY OF INDIVIDUAL FARMS

A summary of important business factors is given in table 24. Farms are arranged by size, from the largest to the smallest, and all the other factors are ranked from the highest to the lowest. The average and the median are given for each factor. By comparing these factors relative weak points in the organization of a farm may be determined.

TABLE 24. IMPORTANT BUSINESS FACTORS FOR 114 DAIRY FARMS WITH CASH CROPS AND MIXED HAY ROUGHAGE

(Arranged according to size of farm)

Farm number	Acres operated	Rank	Acres of crops	Rank	Number of cows	Rank	Average total capital	Rank	Crop sales	Rank	Milk sales	Rank	Cost of milk sold	Rank	Pounds of milk produced per cow	Rank	Man equivalent	Rank	Farm expense	Rank	Labor income	Rank
400	550	1	173.0	1	40.0	7	$39,766	4	$ 745	62	$5,372	14	$2 80	28	7,109	48	4.0	8	$ 9,906	7	$ 434	83
409	499	2	165.1	2	43.0	4	43,411	1	8,124	7	6,164	8	2.28	64	6,957	55	3.1	19	12,308	3	5,670	7
548	450	3	135.0	4	41.5	5	18,614	25	.....	106	4,803	24	2.41	51	5,438	99	3.0	20	3,433	50	1,377	54
533	379	4	124.0	8	62.5	1	43,315	2	2,875	18	8,339	4	2.80	28	4,959	103	4.6	4	12,245	4	2,864	23
431	325	5	93.5	14	31.0	16	8,362	103	1,600	32	3,314	51	3.05	21	4,913	106	2.5	35	5,010	27	730	76
384	314	6	130.0	6	39.5	8	34,164	7	9,953	2	8,504	3	1.66	100	9,527	9	6.6	2	13,763	2	6,333	5
549	300	7	95.8	13	26.0	30	13,638	66	210	90	3,455	45	2.48	47	5,808	90	2.0	64	2,430	74	734	75
537	285	8	86.0	21	33.5	12	18,664	24	603	65	4,105	34	2.11	76	5,786	91	3.8	9	5,980	20	–77	99
436	280	9	157.0	3	24.5	39	31,260	10	9,559	4	4,334	29	2.35	58	7,893	27	3.2	17	7,697	12	6,878	3
383	273	10	65.5	41	37.0	10	22,636	16	1,826	26	9,496	2	1.73	98	11,586	2	3.8	9	8,119	11	2,264	29
373	260	11	74.0	30	32.9	13	17,172	34	.....	106	5,899	11	2.74	33	8,188	23	2.0	64	2,184	83	441	82
398	257	12	83.1	23	19.5	63	16,756	37	1,681	30	3,294	52	1.67	99	8,225	21	1.8	79	2,159	87	3,537	17
547	253	13	90.0	18	22.5	50	11,125	83	572	67	3,200	55	2.39	52	6,182	82	1.8	79	3,608	45	872	70
561	253	13	131.0	5	31.5	15	16,410	40	212	89	5,020	17	1.87	90	6,677	66	3.2	17	2,473	71	1,170	62
448	246	15	124.2	7	50.5	3	42,052	3	4,940	12	7,755	5	1.80	93	7,099	49	5.4	3	8,982	9	4,739	10
364	240	16	65.0	42	23.5	44	11,087	84	934	47	3,121	57	1.59	104	6,089	84	2.1	56	1,561	99	1,860	39
223	227	17	89.0	19	55.5	2	32,065	9	9,188	5	10,232	1	1.50	107	7,345	43	4.4	6	9,172	8	8,787	2
416	227	17	103.0	11	26.5	28	19,665	22	1,562	33	5,175	16	1.95	86	7,966	25	1.8	79	6,664	14	6,433	4
574	225	19	82.0	25	18.0	71	17,555	28	2,258	23	2,476	80	4.16	7	6,358	78	2.7	28	6,585	15	–68	97
554	223	20	121.7	9	29.0	21	35,840	6	4,335	13	5,282	15	2.62	39	7,809	29	3.7	11	13,814	1	4,079	13
541	222	21	59.0	59	13.0	96	12,466	73	801	59	1,934	99	3.25	17	5,918	88	2.0	64	2,177	84	293	88
453	221	22	92.0	15	24.0	41	16,288	42	852	56	2,982	61	2.18	72	5,736	93	2.0	64	3,054	62	1,964	36
428	219	23	76.5	28	25.0	35	18,330	26	540	68	3,765	41	1.90	88	6,589	71	2.1	56	1,228	106	1,435	53
374	217	24	75.0	29	19.5	63	8,111	105	651	64	2,721	74	2.89	24	6,380	77	2.5	35	3,819	39	88	93
417	210	25	57.0	66	21.5	55	13,692	64	735	63	4,995	20	2.02	83	9,204	14	1.4	101	3,693	43	3,584	16
377	210	25	63.8	47	27.5	25	13,496	67	1,362	37	5,011	18	2.35	58	8,580	19	2.6	31	6,108	19	2,932	20
560	204	27	62.0	49	25.0	35	20,184	20	865	54	4,033	36	3.20	19	6,741	62	1.9	76	3,917	38	375	85
439	204	27	54.0	71	23.5	44	17,304	29	18	104	3,499	44	3.81	12	7,194	47	2.2	50	5,104	26	–892	110
412	202	29	62.0	49	18.0	71	15,848	43	4,120	15	2,687	76	1.15	114	6,766	61	2.9	23	3,377	51	3,960	14
387	200	30	67.5	38	14.5	87	16,586	38	9,880	3	1,887	101	2.78	30	6,415	76	3.4	15	6,174	18	5,940	6
557	200	30	58.0	62	22.0	53	10,974	85	323	79	2,839	68	2.06	78	5,752	92	1.8	79	2,532	70	1,148	65
378	197	32	82.5	24	26.0	30	20,218	19	1,760	28	5,985	9	2.22	68	10,385	3	2.4	42	5,804	22	1,734	44
459	195	33	73.4	31	23.0	48	14,846	50	344	77	2,895	67	2.53	44	5,836	89	2.5	35	3,778	40	267	90
375	190	34	49.0	83	23.5	44	14,701	52	853	55	2,311	86	2.97	22	4,578	111	1.4	101	1,099	109	–280	105
391	190	34	84.0	22	30.5	18	17,341	31	387	74	4,473	26	1.60	103	5,964	87	2 2	50	3,321	53	1,875	38
576	188	36	55.0	70	25.5	32	14,262	58	50	101	3,452	46	3.36	15	5,485	97	2.5	35	5,475	24	–1,299	113
558	180	37	53.0	75	23.5	44	22,942	15	830	57	4,304	30	2.85	26	7,707	32	2.3	45	1,748	96	2,172	31
389	180	37	99.5	12	27.5	25	19,874	21	3,062	17	3,346	49	2.35	58	4,984	102	2.6	31	5,349	25	278	89
575	175	39	64.5	43	18.0	71	10,615	88	81	99	2,946	63	2.72	34	6,787	59	2.0	64	2,166	85	–30	94
562	170	40	70.0	33	11.5	101	11,858	78	1,194	40	2,726	73	1.37	112	11,929	1	2.0	64	2,245	78	2,699	25
435	170	40	62.5	48	23.0	48	15,301	48	200	91	4,816	23	1.89	89	9,541	8	3.0	20	6,529	16	–287	106
584	170	40	69.0	36	21.5	55	27,484	11	7,610	9	3,052	59	2.31	62	6,888	56	3.6	12	4,896	28	1,239	60

TABLE 24 (*concluded*)

Farm number	Acres operated	Rank	Acres of crops	Rank	Number of cows	Rank	Average total capital	Rank	Crop sales	Rank	Milk sales	Rank	Cost of milk sold	Rank	Pounds of milk produced per cow	Rank	Man equivalent	Rank	Farm expense	Rank	Labor income	Rank
564	170	40	61.3	53	18.0	71	10,382	89	.....	106	1,877	102	3.84	11	4,912	107	2.1	56	2,939	63	−201	102
390	165	44	47.4	87	30.5	18	32,414	8	.....	106	4,855	21	2.87	25	7,553	37	2.7	28	4,640	30	−1,697	114
444	165	44	79.2	26	40.5	6	14,840	51	600	66	7,570	6	2.29	63	7,255	45	3.3	16	5,552	23	2,607	26
583	165	44	70.0	33	21.5	55	7,344	108	2,235	24	3,238	53	2.34	61	6,663	67	2.5	35	4,520	33	1,625	46
462	164	47	77.0	27	39.5	8	25,206	12	1,948	25	6,824	7	1.91	87	6,788	58	2.0	64	4,596	31	4,799	9
461	163	48	66.0	40	18.5	68	15,535	45	4,947	11	2,970	62	1.51	105	6,970	54	2.8	25	2,190	81	2,994	19
579	160	49	73.0	32	19.0	66	7,972	106	800	60	2,160	89	4.45	5	4,584	110	1.7	88	2,437	73	−44	95
552	160	49	64.5	43	10.5	109	14,460	55	7,770	8	2,145	90	2.76	32	9,388	10	3.0	20	6,364	17	3,758	15
573	160	49	54.0	71	22.0	53	11,885	77	926	49	2,937	65	2.61	41	6,567	73	2.2	50	2,786	66	769	74
538	160	49	53.0	75	32.0	13	14,148	60	.....	106	5,785	12	1.48	108	7,794	30	2.5	35	4,103	35	2,739	24
402	160	49	61.5	51	28.5	23	14,530	53	1,346	38	4,033	36	2.45	49	6,534	74	2.1	56	3,161	57	2,101	32
458	158	54	118.0	10	10.5	109	21,032	17	28,292	1	2,169	88	2.81	27	9,328	12	7.0	1	10,821	6	11,948	1
582	155	55	69.0	36	14.0	94	13,298	68	5,776	10	1,663	104	4.11	9	5,715	94	2.3	45	3,605	46	1,346	55
446	154	56	60.7	55	29.0	21	24,442	13	35	103	5,007	19	2.20	70	8,063	24	3.5	13	5,896	21	−1,013	112
559	152	57	70.0	33	11.5	101	14,180	59	925	50	1,446	107	4.23	6	6,483	75	1.3	103	1,267	104	821	72
555	150	58	60.0	57	34.0	11	37,835	5	1,000	43	5,945	10	1.77	97	7,608	36	4.5	5	7,271	13	−239	103
379	150	58	89.0	19	16.0	82	13,902	62	200	91	3,404	48	1.46	109	10,191	4	1.8	79	2,227	79	2,350	28
368	150	58	56.5	67	26.5	28	13,662	65	820	58	4,057	35	3.55	14	6,705	64	2.1	56	4,592	32	−904	111
392	148	61	55.3	69	24.0	41	8,661	101	320	80	3,109	58	2.77	31	4,872	108	2.0	64	2,535	69	1,016	67
415	147	62	60.0	57	11.5	101	8,772	100	220	85	1,153	112	5.38	1	5,253	101	1.5	94	2,131	88	1,777	42
550	145	63	38.2	103	14.5	87	6,198	113	426	73	1,986	95	2.64	38	6,154	83	1.0	112	1,069	110	449	81
366	140	64	59.0	59	28.5	23	16,405	41	.....	106	4,853	22	2.06	78	7,437	41	2.0	64	4,348	34	375	85
425	140	64	57.5	63	20.5	58	12,658	71	432	72	3,758	42	1.80	93	7,626	35	1.2	109	1,248	105	1,580	48
571	140	64	64.0	45	16.0	82	9,824	93	1,416	36	2,911	66	2.24	67	8,284	20	2.2	50	3,357	52	787	73
568	139	67	52.8	77	18.0	71	11,342	81	2,784	20	1,985	96	3.25	17	4,738	109	1.6	89	2,162	86	1,596	47
578	138	68	66.3	39	25.0	35	17,854	27	8,316	6	4,229	31	1.79	95	7,453	40	4.3	7	8,291	10	4,391	11
432	136	69	43.0	95	19.5	63	11,965	76	950	46	2,040	94	2.66	36	4,495	112	1.3	103	1,925	91	1,225	61
450	135	70	48.5	86	24.0	41	12,157	74	2,861	19	4,158	32	1.79	95	6,581	72	2.3	45	3,740	41	4,193	12
370	135	70	50.0	81	11.0	107	9,444	96	240	83	1,521	105	3.07	20	6,262	80	1.8	79	1,853	92	−530	107
401	135	70	61.0	54	20.0	62	12,152	75	1,318	39	2,757	70	2.03	81	6,223	81	1.8	79	2,191	80	2,200	30
544	135	70	42.0	96	18.5	68	7,326	109	56	100	2,745	71	2.25	66	6,646	68	1.0	112	931	111	1,267	57
423	130	74	49.0	83	31.0	16	16,498	39	224	84	5,505	13	2.03	81	7,327	44	2.1	56	3,475	48	2,080	33
581	130	74	64.0	45	11.0	107	15,058	49	4,280	14	1,146	113	5.30	2	5,614	96	2.9	23	3,442	49	1,780	41
427	128	76	57.5	63	25.0	35	13,733	63	250	82	4,111	33	1.63	102	7,458	39	2.7	28	1,679	98	1,458	52
408	126	77	58.5	61	20.5	58	15,696	44	305	81	1,421	109	4.14	8	3,328	114	1.6	89	1,399	100	−651	108
451	125	78	57.5	63	27.0	27	20,600	18	464	71	2,988	60	1.83	91	5,329	100	2.1	56	2,825	65	4,822	8
419	125	78	61.5	51	25.5	32	23,058	14	1,685	29	4,616	25	2.21	69	7,072	52	1.6	89	3,055	61	2,418	27
441	125	78	46.0	88	16.0	82	8,606	102	958	45	2,647	78	1.97	85	7,079	51	2.5	35	1,849	93	730	76
442	125	78	53.6	73	22.5	50	15,478	46	925	50	4,413	28	1.45	110	9,666	6	1.8	79	4,019	37	2,878	22
455	125	78	92.0	15	18.0	71	17,275	33	930	48	2,421	83	3.56	13	5,677	95	3.5	13	3,735	42	−250	104
572	124	83	91.5	17	10.5	109	12,654	72	377	75	1,455	106	4.57	4	6,646	68	1.3	103	804	112	−162	101
447	116	84	41.2	98	24.5	39	17,312	32	769	61	3,831	40	2.52	45	7,430	42	2.6	31	4,826	29	2,003	35
396	114	85	55.5	68	30.5	18	18,746	23	3,769	16	4,459	27	2.36	57	7,026	53	2.8	25	11,365	5	1,244	59
563	113	86	40.0	101	15.0	86	17,078	35	375	76	3,328	50	2.59	42	9,229	13	2.0	64	2,768	67	409	84

426.....	113	86	60.3	56	11.5	101	10,194	90	200	91	881	114	5.08	3	3,487	113	1.2	109	573	114	-46	96
567.....	112	88	46.0	88	17.5	80	11,230	82	132	97	3,422	47	2.28	64	8,212	22	2.6	31	3,182	56	-81	100
385.....	112	88	49.0	83	25.5	32	15,405	47	324	78	3,860	39	2.13	74	6,767	60	1.9	76	1,398	101	1,016	67
429.....	110	90	51.5	78	18.0	71	17,378	30	2,567	22	3,653	43	1.33	113	9,337	11	2.0	64	3,646	44	3,199	18
399.....	110	90	34.0	107	18.0	71	10,710	87	490	70	2,266	87	2.10	77	5,459	98	2.8	25	2,449	72	925	69
580.....	109	92	33.0	110	11.5	101	7,256	110	.....	106	1,973	98	2.45	49	7,089	50	1.0	112	1,195	107	2,031	34
449.....	105	93	49.5	82	14.5	87	14,372	57	1,474	35	2,579	79	2.62	39	7,508	38	1.9	76	3,107	59	2,926	21
556.....	105	93	53.5	74	14.5	87	12,662	70	1,090	41	2,118	92	2.39	52	6,592	70	1.5	94	770	113	1,294	56
460.....	103	95	42.0	96	18.5	68	13,958	61	899	52	2,105	93	2.39	52	4,956	104	1.3	103	1,997	90	1,746	43
388.....	103	95	37.0	105	19.0	66	9,890	92	967	44	2,446	81	2.65	37	6,060	85	2.4	42	3,286	55	308	87
410.....	100	97	25.5	113	14.5	87	7,123	111	.....	106	2,313	85	1.66	100	6,691	65	1.5	94	1,376	102	1,160	64
381.....	100	97	40.5	99	12.5	98	11,576	80	46	102	2,123	91	2.49	46	8,725	17	1.5	94	2,388	76	846	71
376.....	100	97	37.8	104	18.0	71	9,708	95	168	96	3,988	38	2.05	80	9,569	7	1.8	79	2,914	64	1,459	51
362.....	100	97	50.5	79	14.5	87	8,275	104	1,488	34	2,359	84	2.12	75	7,638	34	2.2	50	2,186	82	1,901	37
577.....	100	97	40.0	101	14.5	87	5,520	114	875	53	2,670	77	1.81	92	7,756	31	2.2	50	2,345	77	1,560	49
371.....	100	97	46.0	88	9.0	114	9,778	94	1,073	42	1,286	110	2.39	52	7,653	33	2.4	42	2,427	75	215	91
540.....	93	103	45.0	92	22.5	50	16,848	36	500	69	2,728	72	2.20	70	6,028	86	1.3	103	3,129	58	458	80
393.....	93	103	50.3	80	17.5	80	14,480	54	220	85	2,941	64	2.70	35	7,877	28	2.0	64	3,314	54	-68	97
566.....	90	105	27.3	112	16.0	82	7,742	107	15	105	3,166	56	1.41	111	8,654	18	1.5	94	1,689	97	1,542	50
569.....	88	106	34.0	107	14.0	94	8,918	98	1,621	31	3,217	54	2.46	48	9,713	5	2.3	45	3,095	60	1,259	58
433.....	84	107	46.0	88	12.5	98	14,442	56	214	88	1,235	111	2.16	73	4,929	105	1.5	94	1,340	103	1,079	66
570.....	80	108	35.0	106	12.0	100	10,188	91	1,815	27	1,981	97	2.94	23	7,943	26	2.1	56	3,550	47	1,168	63
430.....	75	109	31.3	111	11.5	101	9,060	97	192	95	2,422	82	1.99	84	8,747	16	1.6	89	2,084	89	668	78
395.....	70	110	45.0	92	20.5	58	13,006	69	109	98	2,778	69	2.58	43	6,719	63	1.6	89	2,553	68	190	92
553.....	65	111	44.6	94	13.0	96	10,918	86	.....	106	1,925	100	1.51	105	6,826	57	1.2	109	1,110	108	1,852	40
543.....	60	112	40.3	100	10.5	109	8,862	99	199	94	1,427	108	4.05	10	7,222	46	1.5	94	1,783	94	-798	109
397.....	60	112	33.8	109	20.5	58	11,734	79	2,579	21	2,707	75	3.32	16	6,338	79	2.3	45	4,084	36	1,641	45
380.....	43	114	19.8	114	9.5	113	6,946	112	220	85	1,853	103	2.39	52	9,036	15	1.3	103	1,779	95	554	79
Average.	169	.....	66.0	.....	22.4	.....	$15,950	.....	$1,837	.....	$3,527	.....	$2.51	.....	7,025	.....	2.4	.....	$3,916	.....	$1,676	.....
Median..	151	.....	60.0	.....	21.0	.....	$14,317	.....	$825	.....	$3,138	.....	$2.36	.....	6,807	.....	2.1	.....	$3,145	.....	$1,263	.....

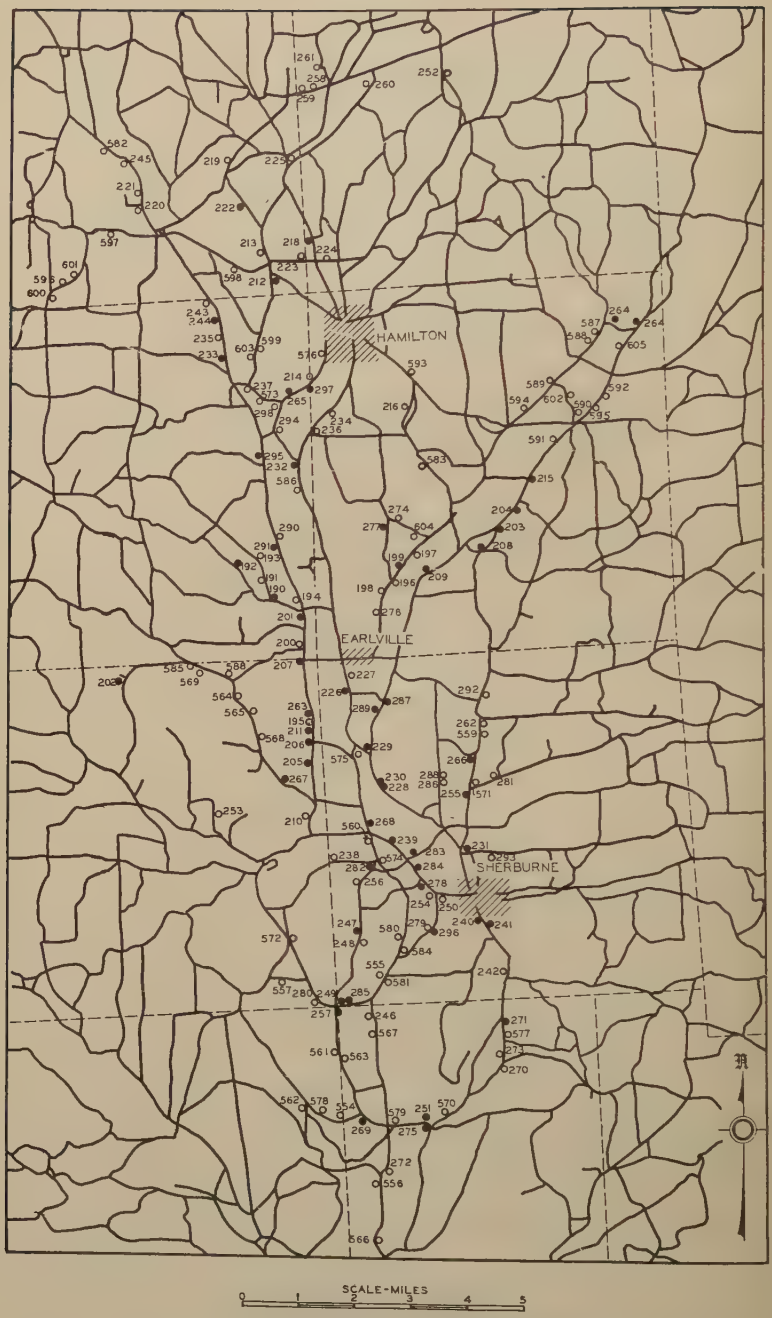

FIGURE 6. LOCATION OF FARMS STUDIED

The farms indicated by the solid black circle furnished records for five consecutive years

SUCCESSFUL FARMS

Farm no. 458 made the largest labor income ($11,948). It ranked fifty-fourth in size of farm, tenth in acres of crops, and first in crop sales. It ranked twelfth in production of milk per cow and there were only five farms with fewer cows. (Table 24.)

Farm no. 223 made a labor income of $8787, and ranked seventeenth in size of farm, nineteenth in acres of crops, and fifth in crop sales. It had a low cost of producing milk.

Farm no. 436 made the third highest labor income. It was ninth in size of farm, third in acres of crops, and fourth in crop sales.

PART II. COMPARISON OF RESULTS FOR FIVE CONSECUTIVE CROP YEARS, 1921–1925

LOCATION

Altogether, in the five years, 509 records were taken. Records of 54 farms were taken for five consecutive years, of 17 farms for four years, of 27 farms for three years, and of 14 farms for two years; while of 62 farms only one record was taken.

The number of records taken each year and the percentage of these on the hill or upland areas are given in table 25:

TABLE 25. LOCATION OF FARMS, FIVE YEARS, 1921–1925

	1921	1922	1923	1924	1925
Number of records	121	88	95	91	114
Number of hill farms	35	20	26	26	43
Per cent of farms located on hills	29	23	27	29	38

The locations of the farms are shown in figure 6. Earlville, which is situated in both Chenango and Madison Counties, is approximately in the center of the area studied.

The location of the 54 farms studied for five consecutive years is indicated by the solid black circle. The larger number of these farms is in Chenango County between the villages of Sherburne and Earlville. Of these 54 farms, 22.2 per cent are situated in the hills.

VARIATION IN LABOR INCOMES

In the five years studied the agricultural depression was at its height. Dairymen experienced extremely difficult times and it is not surprising to find that a large number of them failed to make interest on the capital.

Over the five-year period, 34 per cent of the farms failed to make 5 per cent interest on their capital; 35 per cent made labor incomes of from $1 to $999; 21 per cent made from $1000 to $1999; and 10 per cent of the farms made labor incomes of more than $2000 (table 26).

The distribution of labor incomes varied considerably from year to year. In 1922, the poorest year, 45 per cent of the farms failed to make interest, 38 per cent made less than $1000, 16 per cent made from $1000 to $1999,

TABLE 26. VARIATION IN LABOR INCOMES, FIVE YEARS, 1921–1925

Labor incomes	Per cent of farms making labor incomes as designated					
	1921	1922	1923	1924	1925	Five-year simple average
Minus $1 and less	37	45	35	33	18	34
$1 to $999	38	38	40	39	22	35
$1,000 to $1,999	13	16	21	24	29	21
More than $2,000	12	1	4	4	31	10
Total	100	100	100	100	100	100

and 1 per cent made more than $2000. In 1925, the most favorable year, only 18 per cent failed to make interest, 22 per cent made from $1 to $999, 29 per cent made from $1000 to $1999, while 31 per cent of the farms made labor incomes of more than $2000.

For all farms the average labor income for five years was $580, varying from $32 in 1922 to $1676 in 1925 (table 27).

Farm receipts are influenced both by variations in yields and by fluctuations in prices and, therefore, varied considerably from year to year. The lowest average farm receipts were $4550 in 1922, and the highest were $7381 in 1925 (table 27).

Farm expenses are not influenced by yields so much as are farm receipts. Furthermore, the year to year changes in prices received for farm products have been greater than the changes in the items of expense. The average farm expense was lowest in 1924, $3681, and highest in 1925 when it averaged $4907 (table 27).

TABLE 27. LABOR INCOMES, FIVE YEARS, 1921–1925

	1921	1922	1923	1924	1925	Five-year simple average
Number of farms	121	88	95	91	114	509
Capital	$16,586	$16,080	$15,546	$15,011	$15,950	$15,835
Receipts	$5,082	$4,550	$5,247	$4,921	$7,381	$5,436
Expenses	$3,932	$3,714	$4,087	$3,681	$4,907	$4,064
Farm income	$1,150	$836	$1,160	$1,240	$2,474	$1,372
Interest at 5 per cent	$829	$804	$777	$751	$798	$792
Labor income	$321	$32	$383	$489	$1,676	$580
Cash living costs	$816	$739	$714	$706	$676	$730

For the 54 farms studied for five consecutive years, the five-year-average labor income was $687 (table 28). On these farms the labor income was lowest, $63, in 1922 and highest, $1704, in 1925. These 54 farms were therefore the better farms of the area, and receipts and expenses varied less from year to year than on all farms.

TABLE 28. LABOR INCOMES FOR FIVE CONSECUTIVE YEARS ON THE SAME 54 FARMS

	Year					
	1921	1922	1923	1924	1925	Five-year simple average
Capital	$17,573	$16,986	$16,833	$16,293	$16,435	$16,824
Receipts	5,724	5,140	5,602	5,664	7,330	5,892
Expenses	4,103	4,228	4,408	4,274	4,804	4,363
Farm income	1,621	912	1,194	1,390	2,526	1,529
Interest at 5 per cent	879	849	842	815	822	842
Labor income	742	63	352	575	1,704	687
Cash living costs	818	766	735	776	717	762

The average amount of cash spent for living was $730 for all farms (table 27) and $762 for the 54 farms studied for five consecutive years (table 28).

FACTORS INFLUENCING LABOR INCOMES

Over the five-year period the two factors that had the greatest influence on labor income were cost of producing milk, and the percentage of the total income derived from crops sold. On an average for the five years, cost of milk accounted for 18 per cent of the influence of the various factors, and income from crops sold for 17 per cent of the influence.

The number of cows, the production per cow, and the feed costs, were fairly uniform from year to year. Thus the cost of milk over the several years was not greatly different. Since the cost of milk was fairly uniform from year to year, its influence on labor income was much the same each year.

TABLE 29. PERCENTAGE DETERMINATION OF LABOR INCOME BY CAPITAL PER FARM, PERCENTAGE OF THE INCOME FROM CROPS, AND COST OF MILK, FIVE YEARS,* 1921–1925

	1921	1922	1923	1924	1925	Five-year average
Capital	.....	2	1	.....	9	.....
Per cent of income from crops	13	1	12	2	31	17
Cow cost of producing milk	19	24	20	18	9	18
Total	32	27	33	20	49	35
$R_{1.234}$	0.56	0.52	0.59	0.45	0.70	.....

* X_1 = labor income; X_2 = capital per farm; X_3 = per cent of income from crops; X_4 = cow cost of milk.

	1921	1922	1923	1924	1925
r_{12}	−0.09	−0.18	−0.08	−0.01	+0.39
r_{13}	+0.35	+0.09	+0.30	+0.12	+0.57
r_{14}	−0.43	−0.48	−0.36	−0.41	−0.28

On the other hand, the influence of crop sales on labor income varied considerably from year to year. In years with favorable prices or good crop yields the influence was marked, in other years it had little bearing on labor income. In 1925, when good yields were combined with favorable prices, the percentage of the income from crops sold overshadowed the influence of cost of milk, and accounted for 31 per cent of the influence of the various factors; in 1922, a poor crop year, it accounted for only 1 per cent of the influence (table 29).

COST OF MILK

Details of the costs and returns per 100 pounds of milk produced for each year are given in table 30. The five-year-average gross cost of pro-

TABLE 30. COSTS AND RETURNS PER 100 POUNDS OF MILK PRODUCED, FIVE YEARS, 1921–1925

	1921	1922	1923	1924	1925	Five-year simple average	Per cent of total
Number of records	121	88	95	91	114	102	
Number of cows	2,749	1,934	2,142	1,961	2,556	2,268	
Costs:							
Concentrates	$0.73	$0.70	$0.69	$0.68	$0.74	$0.71	24.9
Succulent feed	0.42	0.37	0.34	0.32	0.33	0.36	12.6
Dry forage	0.46	0.45	0.39	0.31	0.34	0.39	13.7
Pasture	0.13	0.12	0.13	0.13	0.12	0.13	4.6
Bedding	0.02	0.03	0.02	0.02	0.02	0.02	0.7
Human labor	0.64	0.57	0.52	0.70	0.67	0.62	21.8
Horse labor	0.03	0.03	.....	0.05	0.05	0.03	1.0
Hauling milk	0.15	0.12	0.13	0.13	0.14	0.13	4.6
Use of buildings	0.13	0.10	0.09	0.10	0.09	0.10	3.5
Use of equipment	0.04	0.03	0.04	0.03	0.01	0.03	1.0
Interest on cows	0.12	0.12	0.10	0.11	0.11	0.11	3.8
Depreciation on cows	0.05	0.08	0.21	0.09	0.03	0.09	3.2
Bull service	0.07	0.07	0.08	0.04	0.04	0.06	2.1
Miscellaneous	0.08	0.07	0.07	0.06	0.05	0.07	2.5
Total	$3.07	$2.86	$2.81	$2.77	$2.74	$2.85	100.0
Returns:							
Milk sold wholesale:							
Cash	$1.97	$2.00	$2.05	$2.03	$2.30	$2.07	79.6
Certificates of indebtedness	0.13	0.12	0.07	0.06	0.07	0.09	3.5
Milk used on farm	0.16	0.15	0.12	0.14	0.14	0.14	5.4
Calves and calf hides	0.10	0.10	0.07	0.08	0.08	0.08	3.0
Manure	0.25	0.25	0.17	0.20	0.19	0.21	8.1
Miscellaneous	.....	0.01	0.01	.....	0.01	0.01	0.4
Total	$2.61	$2.63	$2.49	$2.51	$2.79	$2.60	100.0
Loss	$0.46	$0.23	$0.32	$0.26	.....	$0.25	.....
Gain	.....	.....	.....	.....	$0.05	.....	.....
Cow cost of milk	$2.56	$2.35	$2.44	$2.35	$2.32	$2.41	.....
Herd cost of milk	$2.63	$2.37	$2.58	$2.51	*	.....	.....
Returns per hour of labor (cents)	9.3	16.6	12.6	21.0	36.2	19.1	.....

* Not calculated.

ducing milk was $2.85 per 100 pounds. Of this, feed, including pasture, comprised 55.8 per cent. Concentrates were 24.9 per cent of the total cost, succulent feed was 12.6 per cent, dry forage 13.7 per cent, pasture 4.6 per cent, and human labor 21.8 per cent. Feed and labor, therefore, comprised 77.6 per cent of the gross cost of producing milk, calves, and manure. Interest and depreciation were 7.0 per cent of the cost. Other items were of lesser importance.

Milk sold wholesale, including cash and certificates of indebtedness, amounted to 83.1 per cent of the returns from the dairy enterprise. Milk used on the farm and calves, and calf hides amounted to 8.4 per cent and manure to 8.1 per cent of the returns.

The average net cost per 100 pounds of milk produced was $2.41 and the loss was 25 cents per 100 pounds. The average returns per hour of labor for milk production for the five years were 19.1 cents, and varied from 9.3 cents per hour in 1921 to 36.2 cents in 1925.

The five-year average per cow was $133.41 from milk sold wholesale and $27.29 for other products such as calves and calf hides, manure, and milk used on the farm, a total of $160.70 (table 31). The gross cost of

TABLE 31. COSTS AND RETURNS PER COW, FIVE YEARS, 1921–1925

	1921	1922	1923	1924	1925	Five-year simple average
Costs:						
Concentrates	$41.85	$41.44	$43.83	$41.85	$48.49	$43.49
Succulent feed	24.47	22.10	21.89	19.69	21.61	21.95
Dry forage	26.48	26.48	24.51	18.71	22.83	23.80
Pasture	7.58	7.30	8.09	7.83	7.66	7.69
Bedding	1.39	1.49	1.50	1.11	1.31	1.36
Human labor	36.79	33.54	33.41	43.20	44.52	38.29
Horse labor	1.66	1.55	0.12	2.88	3.26	1.90
Hauling milk	8.96	7.35	8.24	8.29	9.50	8.47
Use of buildings	7.32	5.72	5.62	6.07	6.18	6.18
Use of equipment	2.57	1.50	2.34	1.77	0.77	1.79
Interest on cows	6.77	7.22	6.67	6.85	6.98	6.90
Depreciation on cows	2.70	4.94	13.30	5.78	2.17	5.78
Bull service	4.10	4.21	5.10	2.66	2.62	3.74
Miscellaneous	4.47	3.97	4.53	3.53	3.29	3.96
Total	$177.11	$168.81	$179.15	$170.22	$181.19	$175.30
Returns:						
Milk sold wholesale:						
Cash	$113.25	$118.13	$130.87	$124.41	$152.47	$127.83
Certificates of indebtedness	7.29	7.34	4.67	3.82	4.80	5.58
Milk used on farm	9.11	9.01	7.97	8.11	9.39	8.72
Calves and calf hides	6.00	6.18	4.42	4.98	5.01	5.32
Manure	14.56	14.47	10.58	12.53	12.48	12.92
Miscellaneous	0.20	0.33	0.39	0.29	0.42	0.33
Total	$150.41	$155.46	$158.90	$154.14	$184.57	$160.70
Loss	$26.70	$13.35	$20.25	$16.08	.....	$14.60
Gain	.....	.....	.....	.....	$3.38	.....

keeping a cow averaged $96.93 for feed, $38.29 for human labor, and $40.08 for all else, a total of $175.30. The loss therefore averaged $14.60 per cow, but varied from a loss of $26.70 in 1921 to a gain of $3.38 per cow in 1925.

With an increase in cost of milk, the labor income decreased. When the cost of milk was $2 and less per 100 pounds, the labor income averaged $1334; when the cost was from $2.01 to $2.75, the labor income was $590; and when the cost was more than $2.75 per 100 pounds, the labor income

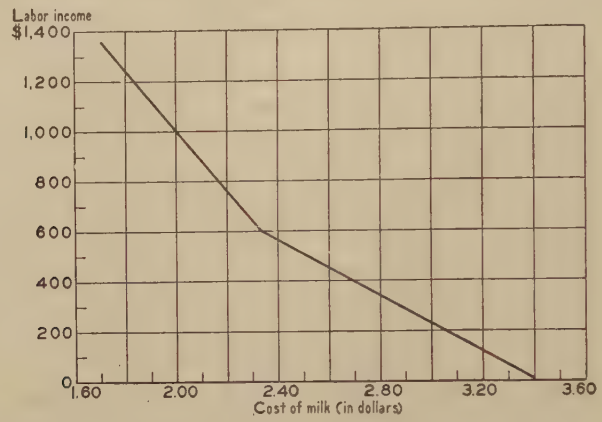

FIGURE 7. RELATION OF COST OF MILK TO LABOR INCOME

averaged $5. This general relationship was true for each of the five years, altho the actual labor incomes varied from year to year. Details are given in table 32. A graphic illustration of the relationship between cost of milk and labor income is given in figure 7.

TABLE 32. RELATION OF COST OF MILK TO LABOR INCOME, FIVE YEARS, 1921–1925

Cost of milk	Average cost of milk	Labor income					
		1921	1922	1923	1924	1925	Five-year simple average
$2.00 and less	$1.72	$1,238	$623	$1,010	$976	$2,822	$1,334
$2.01 to $2.75	2.35	416	31	519	579	1,406	590
More than $2.75	3.41	−173	−627	−172	1	998	5
		Number of farms or records					Total
$2.00 and less	$1.72	21	29	13	26	31	120
$2.01 to $2.75	2.35	51	33	54	33	51	222
More than $2.75	3.41	49	26	28	32	32	167

Factors influencing cost of milk

There are several factors which influence the cost of milk, such as the number of cows per farm, the production per cow, the time of freshening, the grade of cows, and the distance to market.

Number of cows

In herds of 16 cows and less the five-year average cost of milk was $2.61, in herds of 17 to 25 cows the cost was $2.57, and in herds of more than 25 cows the cost was $2.44 (table 33). This was due partly to the fact that

TABLE 33. RELATION OF NUMBER OF COWS TO COST OF MILK, FIVE YEARS, 1921–1925

Number	Average number of cows	Cost of milk					
		1921	1922	1923	1924	1925	Five-year simple average
16 cows and less.....	14	$2.55	$2.39	$2.71	$2.62	$2.80	$2.61
17 to 25 cows.....	21	2.73	2.53	2.59	2.50	2.48	2.57
More than 25 cows....	33	2.71	2.46	2.41	2.37	2.26	2.44
		Number of farms or records					Total
16 cows and less.....	14	37	29	29	24	33	152
17 to 25 cows.....	21	46	35	37	46	47	211
More than 25 cows....	33	38	24	29	21	34	146

less labor was employed on the smaller herds than on the larger herds. Labor was one of the most expensive items in the early part of the depression. Also, it was easier for farmers having large herds than for those buying feed in small amounts, to economize in the purchase of feed.

Not much change was made in the number of cows per farm, but the production per cow was increased. The yearly changes in number of cows and the milk sold per cow are shown in figure 8.

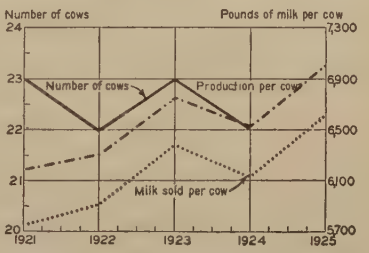

FIGURE 8. NUMBER OF COWS PER FARM, PRODUCTION PER COW, AND MILK SOLD PER COW FOR EACH OF THE FIVE YEARS, 1921 TO 1925

Production per cow

As the production per cow increased, the cost of milk decreased. With a production of less than 6000 pounds per cow the five-year average cost of milk was $2.97 per 100 pounds, with that of 6000 to 7500 pounds the cost was $2.36, and where the production was more than 7500 pounds the cost averaged $2.18. Details are given in table 34. The relationship between the production per cow, the cost of milk, and the labor income, is illustrated in figure 9.

TABLE 34. RELATION OF COST OF MILK TO PRODUCTION PER COW, FIVE YEARS, 1921–1925

	Pounds of milk per cow		
	Less than 6,000	6,000 to 7,500	More than 7,500
1921:			
Number of farms	54	41	26
Number of cows	24	23	20
Cost per 100 pounds of milk	$3.04	$2.40	$2.32
1922:			
Number of farms	42	35	11
Number of cows	21	22	24
Cost per 100 pounds of milk	$2.74	$2.28	$1.99
1923:			
Number of farms	27	47	21
Number of cows	21	24	23
Cost per 100 pounds of milk	$3.03	$2.41	$2.35
1924:			
Number of farms	35	36	20
Number of cows	21	22	22
Cost per 100 pounds of milk	$2.98	$2.25	$2.11
1925:			
Number of farms	29	48	37
Number of cows	23	23	21
Cost per 100 pounds of milk	$3.05	$2.46	$2.14
Total number of farms	187	207	115
Five-year simple average:			
Number of cows	22	23	22
Production per cow	5,000	6,800	8,700
Cost per 100 pounds of milk	$2.97	$2.36	$2.18

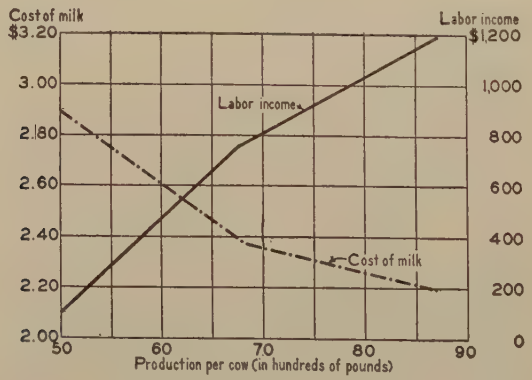

FIGURE 9. RELATION OF PRODUCTION PER COW TO COST OF MILK AND TO LABOR INCOME

Combined influence of number of cows and production per cow

It is the production per cow rather than the size of the dairy herd that had the most influence on cost of milk and labor income. A small herd with a high production per cow and a large herd with a high production per cow gave equally good returns. As a five-year average, where fewer than 16 cows were kept per farm, the labor income amounted to $185 if the production per cow was below 6000 pounds, and $1355 if it was more than 7500 pounds (table 35). Where more than 25 cows were kept, the labor income was –$96 if the average production was less than 6000 pounds, and $1388 if the average production was more than 7500 pounds per cow. In years when the prices of dairy products are favorable, the large herds with high production per cow make the highest net returns. For the period of low prices under consideration (1921–1925, inclusive) the large herds with either high or low production did not make better returns than the small herds with similar production (table 35).

The cost of milk decreased with an increase in number of cows and production per cow, notwithstanding an increase in number of men employed. With a production of less than 6000 pounds, 1.7 men (man equivalent), including the operator, were employed on farms keeping 16 cows or less, 2.1 on those keeping from 17 to 25 cows, and 2.7 men on farms having more than 25 cows. Where more than 7500 pounds were produced per cow the man equivalent was 2.0, 2.3, and 3.3 for farms keeping 16 cows or less, from 17 to 25 cows, and more than 25 cows respectively. (Table 35.)

As the production per cow increased, the percentage of the total income derived from crops decreased. When the average production was 5000

TABLE 35. RELATION OF NUMBER OF COWS TO POUNDS OF MILK PER COW AND TO OTHER FACTORS, FIVE-YEAR AVERAGE

Pounds of milk per cow	Average pounds per cow	Per cent of cows freshening from September to December, inclusive	Man equivalent	Cost of milk per 100 pounds	Labor income
		16 cows and less			
Less than 6,000	5,000	32	1.7	$3.08	$ 185
6,000 to 7,500	6,800	47	1.8	2.46	640
More than 7,500	8,600	56	2.0	2.32	1,355
		17 to 25 cows			
Less than 6,000	4,900	34	2.1	$2.99	$197
6,000 to 7,500	6,800	48	2.1	2.35	833
More than 7,500	8,700	63	2.3	2.13	829
		More than 25 cows			
Less than 6,000	5,000	35	2.7	$2.79	–$ 96
6,000 to 7,500	6,800	45	2.8	2.33	759
More than 7,500	8,800	60	3.3	2.14	1,388

pounds per cow, 18 per cent of the income came from crops; when it was 6790 pounds, 15.8 per cent came from crops; and when it was 8700 pounds, 15.4 per cent was derived from crops (table 36). This was due to two reasons. In the first place, with an increase in production per cow, the milk sales increased, and thus with an equal value of crop sales, the percentage of the total receipts contributed by crops decreased. Also, the dairymen who obtain high yields per cow were the more specialized dairymen who gave more attention to their cows and grew fewer cash crops. Details are given in table 36:

TABLE 36. RELATION OF PRODUCTION PER COW TO OTHER FACTORS, FIVE-YEAR AVERAGE

Production per cow	Average production per cow (hundredweight)	Number of cows	Per cent of income from crops	Man equivalent	Labor income
Less than 6,000 pounds	50.0	22.2	18.0	2.1	$ 106
6,000 to 7,500 pounds	67.9	22.8	15.8	2.3	769
More than 7,500 pounds	87.0	21.4	15.4	2.4	1,177

TABLE 37. RELATION OF PERCENTAGE OF COWS FRESHENING FROM SEPTEMBER TO DECEMBER, INCLUSIVE, TO COST OF MILK, FIVE YEARS, 1921–1925

	Per cent of cows freshening in the fall		
	Less than 25	25 to 50	More than 50
1921:			
Number of farms	30	57	34
Number of cows	23	22	24
Cost of milk per 100 pounds	$2.79	$2.77	$2.39
1922:			
Number of farms	18	37	33
Number of cows	24	21	22
Cost of milk per 100 pounds	$2.44	$2.71	$2.21
1923:			
Number of farms	17	33	45
Number of cows	20	25	22
Cost of milk per 100 pounds	$2.97	$2.51	$2.47
1924:			
Number of farms	11	37	43
Number of cows	20	23	21
Cost of milk per 100 pounds	$2.63	$2.71	$2.29
1925:			
Number of farms	17	33	64
Number of cows	22	22	23
Cost of milk per 100 pounds	$2.65	$2.81	$2.31
Total number of records	93	197	219
Five-year simple average:			
Number of cows	22	23	22
Per cent of cows freshening from September to December, inclusive	13	39	64
Cost of milk per 100 pounds	$2.70	$2.70	$2.33

Per cent of cows freshening in the fall

In each of the five years the cost of milk was lower when more than 50 per cent of the cows freshened during the months of September to December, inclusive, than when fewer freshened in those months. When more than 50 per cent of the cows freshened in the fall, the cost per 100 pounds of milk averaged $2.33 for the five years; when 50 per cent or less freshened in the fall, the cost was $2.70 (table 37).

This lower cost was mainly due to a higher production per cow in herds freshening in the fall than in those freshening in other months. In herds where less than 25 per cent of the cows freshened from September to December, inclusive, the production was 5600 pounds per cow; where from 25 to 50 per cent freshened in the fall, the production was 6300 pounds; and where more than 50 per cent freshened in the fall, 7200 pounds were produced per cow (table 38).

TABLE 38. RELATION OF PERCENTAGE OF COWS FRESHENING FROM SEPTEMBER TO DECEMBER, INCLUSIVE, TO PRODUCTION PER COW, FIVE YEARS, 1921–1925

Per cent of cows freshening in the fall	Production per cow (hundredweight)					
	1921	1922	1923	1924	1925	Five-year simple average
Less than 25	53	54	54	58	61	56
25 to 50	62	60	68	59	65	63
More than 50	72	70	72	72	76	72

This relationship between the percentage of cows freshening in the fall and the production per cow was true irrespective of the size of the dairy herd (table 35).

The tendency for production per cow to increase with an increase in the percentage of cows freshening in the fall for the herds of different size is illustrated in figure 10.

If a large percentage of the cows freshen in the fall, the labor income is not only affected by the lower cost of producing milk, which accompanies the higher production per cow, but also by the fact that a large quantity of milk is sold at a time when milk prices are most favorable.

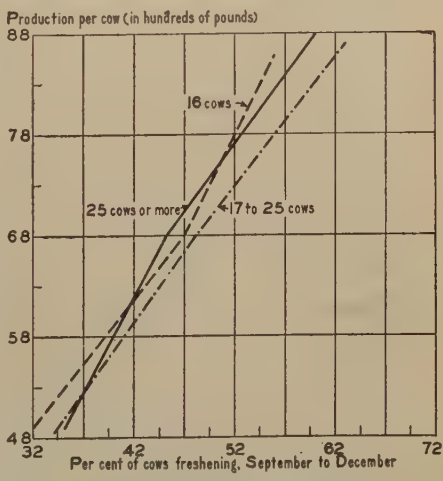

FIGURE 10. RELATION OF PERCENTAGE OF COWS FRESHENING IN FALL TO PRODUCTION PER COW

Grade of cows

Dairymen that kept purebred cows suffered more from the agricultural depression than did those that kept grades or mixed herds of

grades and purebreds. The cost of producing milk was lowest when all cows were grades (table 39). When purebred herds are kept, the production of milk is only part of the objective; calves are raised and cows are fed heavily to maintain them in good condition for record making or for sale, and consequently more labor and feed are used than for grade herds. This makes the cost of producing milk in purebred herds higher than in grade herds, especially in years when, because of a depression in the purebred business, calves have a low value at birth.

TABLE 39. RELATION OF GRADE OF COWS TO COST OF MILK, FIVE YEARS, 1921–1925

	Grade cows	Grade and purebred cows	Purebred cows
1921:			
Number of farms	52	51	18
Number of cows	24	21	24
Cost of milk per 100 pounds	$2.59	$2.73	$2.74
1922:			
Number of farms	30	42	16
Number of cows	22	21	25
Cost of milk per 100 pounds	$2.23	$2.50	$2.79
1923:			
Number of farms	37	39	19
Number of cows	22	21	27
Cost of milk per 100 pounds	$2.59	$2.44	$2.80
1924:			
Number of farms	35	36	20
Number of cows	19	21	26
Cost of milk per 100 pounds	$2.50	$2.53	$2.45
1925:			
Number of farms	49	41	24
Number of cows	21	23	24
Cost of milk per 100 pounds	$2.52	$2.58	$2.37
Total number of records	203	209	97
Five-year simple average:			
Number of cows	22	21	25
Cost of milk per 100 pounds	$2.49	$2.56	$2.63

For the five-year average, the cost per 100 pounds of milk produced was $2.49 for grade herds, $2.56 for mixed herds, and $2.63 for purebred herds. The five-year average milk yield was 6171 pounds per cow in the grade herds and 7233 pounds in the purebred herds; that is, the average yield per cow in the purebred herds was 17 per cent higher than the yield in the grade herds.

For the years 1921, 1922, and 1923, the cost of milk per 100 pounds averaged $2.47 in grade herds and $2.78 in purebred herds, or 13 per cent higher in purebred herds than in grade herds. But for the years 1924 and 1925 the cost of milk per 100 pounds was $2.51 in grade herds and $2.41 in purebred herds, or 4 per cent less in purebred herds than in grade herds. When the agricultural depression began, farmers were in the habit of feeding the purebred cattle for sale, but as a result of the poor prices for

cattle they gradually changed their feeding practices and thus lowered the cost of keeping cows. In those years they fed cows only for milk. Since purebreds are higher producers than grades, the cost per unit of product was less than for grades.

The importance of a high yield per cow is again stressed. Whether all the cows were grades, or part grades and part purebreds, or all purebred, there was the usual decrease in the cost of producing milk with an increase in production of milk per cow (figure 11). The rate of the decrease of

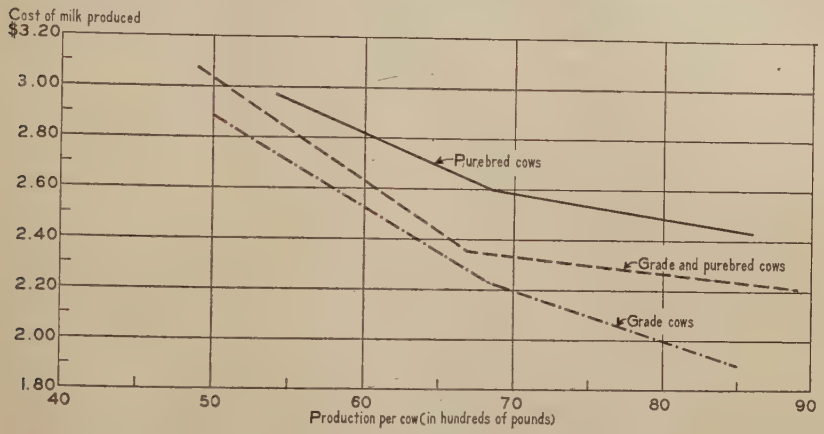

FIGURE 11. RELATION OF GRADE OF COWS TO PRODUCTION PER COW AND TO COST OF MILK

cost of milk with an increase in production was greatest where all the cows were grades, and least where all were purebred.

The cost of milk was lowest where grade herds were kept, but the labor income was highest where farms had a mixed grade and purebred herd (table 40). The labor income on farms keeping only grade cows ranged from -$8 in the case where fewer than 6000 pounds were produced to $1146 where more than 7500 pounds were produced. In the case of mixed herds, the labor incomes were $197 and $1580, respectively, for the same production; and in the case of purebreds, $327 and $599, respectively, for the same production.

Since the purebred cows in the mixed herds received the same treatment as the grades and the cost of feed was lower than for purebreds only, the labor income for the mixed herds was higher than that for the purebred herds. On the other hand, the mixed herds had better cows and the average production was a little higher than where all the cows were grades. A lower cost of feed combined with a better production of milk resulted in a lower cost of milk and a higher labor income than in the other groups.

A slightly higher percentage of the cows freshened in the fall where all or part of the cows were purebred than where all were grade cows. As in the case of size of herd, the production per cow increased and the cost

of milk decreased with an increase in the percentage of cows freshening in the fall. Details are given in table 41.

TABLE 40. RELATION OF GRADE OF COWS TO POUNDS OF MILK PER COW AND TO OTHER FACTORS, FIVE-YEAR AVERAGE

Pounds of milk per cow	Average production per cow	Number of farms	Per cent of cows freshening from September to December, inclusive	Man equivalent	Cost of milk per 100 pounds	Labor income
			Grade cows			
Less than 6,000	5,000	98	26	2.2	$2.88	-$ 8
6,000 to 7,500	6,800	75	42	2.1	2.24	870
More than 7,500	8,500	30	59	2.2	1.91	1,146
			Grade and purebred cows			
Less than 6,000	4,900	72	43	2.0	$3.07	$ 197
6,000 to 7,500	6,700	86	50	2.2	2.35	890
More than 7,500	8,900	51	61	2.5	2.22	1,580
			Purebred cows			
Less than 6,000	5,400	17	43	2.3	$2.96	$327
6,000 to 7,500	6,800	46	49	2.7	2.61	378
More than 7,500	8,600	34	57	2.6	2.43	599

TABLE 41. RELATION OF GRADE OF COWS TO PERCENTAGE OF COWS FRESHENING IN THE FALL AND TO OTHER FACTORS, FIVE-YEAR AVERAGE

Per cent of cows freshening from September to December, inclusive	Average per cent	Number of farms	Number of cows	100 pounds of milk produced per cow	Man equivalent	Cost of milk	Labor income
			Grade cows				
Less than 25	11	65	22	52	2.3	$2.73	$ 65
25 to 50	38	67	22	61	2.2	2.51	568
More than 50	58	71	21	71	2.0	2.29	826
			Grade and purebred cows				
Less than 25	14	27	20	59	2.1	$2.83	$ 532
25 to 50	41	81	22	61	2.3	2.74	410
More than 50	67	101	21	72	2.2	2.36	1,206
			Purebred cows				
Less than 25	15	7	23	66	2.7	$2.71	$627
25 to 50	41	43	25	69	2.5	2.87	-102
More than 50	64	47	26	76	2.6	2.35	921

Distance to milk station and elevation of farms

The cost of producing milk was higher on valley farms than on farms located on the hills. On hill farms 1.5 miles and less from the milk station the cost of milk averaged $2.47, and on those more than 1.5 miles from the station $2.52 per 100 pounds. On valley farms 1.5 miles or less from the milk station the cost was $2.51, while on those more than 1.5 miles from the station the cost was $2.64. (Table 42.)

Feed is cheaper on the hill farms where most of the crops are grown for the dairy enterprise and not for sale, and labor is lower than on the valley farms where more high-priced cash crops are grown.

TABLE 42. RELATION OF ELEVATION AND DISTANCE TO MILK STATION TO COST OF MILK, FIVE YEARS, 1921–1925

	Hill		Valley	
	0 to 1.5 miles	More than 1.5 miles	0 to 1.5 miles	More than 1.5 miles
1921:				
Number of farms	12	23	57	29
Cost of milk per 100 pounds	$2.59	$2.75	$2.51	$2.96
1922:				
Number of farms	9	10	36	33
Cost of milk per 100 pounds	$2.40	$2.39	$2.46	$2.51
1923:				
Number of farms	11	14	45	25
Cost of milk per 100 pounds	$2.47	$2.19	$2.71	$2.58
1924:				
Number of farms	15	10	38	28
Cost of milk per 100 pounds	$2.27	$2.68	$2.50	$2.56
1925:				
Number of farms	24	15	46	29
Cost of milk per 100 pounds	$2.60	$2.60	$2.38	$2.59
Total number of records	71	72	222	144
Five-year simple average:				
Cost of milk per 100 pounds	$2.47	$2.52	$2.51	$2.64

Summary of factors influencing cost of milk

The influence of such factors as number of cows per farm, production per cow, and distance to milk station, on the cost of milk has been discussed. The relation of each of these factors to the cost of milk and to labor income is given in table 43:

TABLE 43. RELATION OF COST OF MILK TO OTHER FACTORS, FIVE-YEAR AVERAGE

Cost of milk per 100 pounds	Average cost of milk	Number of farms	Number of cows	Production per cow (100 pounds)	Distance to milk station (miles)	Labor income
$2.00 and less	$1.72	120	23	75	1.8	$1,334
$2.01 to $2.75	2.35	222	23	67	1.7	590
More than $2.75	3.41	167	21	57	2.0	5

Every increase in the cost of milk was accompanied by an increase in the distance to the milk station, a decrease in the number of cows per farm, a decrease in the pounds of milk per cow, and finally a decrease in the labor income per farm. A cost of $1.72 per 100 pounds of milk gave a labor income of $1334, a cost of $2.35 gave a labor income of $590, and a cost of $3.41 per 100 pounds gave a labor income of $5, as a five-year average.

INCOME FROM CROPS

Altho the influence that the percentage of the total income derived from crop sales had on labor income varied considerably from year to year, the tendency was for labor income to increase with an increase in that percentage. When 10 per cent or less of the income was derived from crops sold, the labor income averaged $228; and when more than 25 per cent was from crops sold, the labor income averaged $1220. (Table 44.)

TABLE 44. RELATION OF PERCENTAGE OF INCOME FROM CROPS SOLD TO LABOR INCOMES, FIVE YEARS, 1921–1925

	Per cent of income from crops sold		
	10 and less	11 to 25	More than 25
1921:			
Number of farms	45	39	37
Labor income	–$228	$446	$855
1922:			
Number of farms	52	28	8
Labor income	–$62	$126	$310
1923:			
Number of farms	37	42	16
Labor income	$44	$379	$1,176
1924:			
Number of farms	44	27	20
Labor income	$466	$452	$590
1925:			
Number of farms	48	37	29
Labor income	$919	$1,490	$3,168
Total number of records	226	173	110
Five-year simple average:			
Per cent of the income from crops sold	4	17	40
Labor income	$228	$579	$1,220

The two most important cash crops were cabbage and peas. The percentage of the income from crops sold was directly influenced by the income from these two crops. An increase in acreage of either peas or cabbage gave an increase in the percentage of the income from crops.

Acres of peas

As a five-year average, the production of market peas paid well in this region. Farms not growing peas made a labor income of $386 for the five years. Farms with fewer than 4 acres of peas made $502, those with

from 4 to 6 acres of peas $801, and farms with more than 6 acres of peas made a labor income of $2248 for the five years. The number of cows was practically the same in each group. (Table 45.)

TABLE 45. RELATION OF ACRES OF PEAS PER FARM TO OTHER FACTORS, FIVE-YEAR AVERAGE

	Acres of peas			
	None	0.1 to 3.9	4.0 to 6.0	More than 6.0
Number of farm records	272	128	69	40
Acres of peas	.....	1.8	4.5	15.7
Yield of peas per acre (bushels)	.....	132	146	141
Per cent of the income from crops sold	9	17	28	43
Man equivalent	2.2	2.1	2.4	3.2
Number of cows	23	21	22	25
Capital per farm	$16,100	$13,400	$16,200	$21,600
Labor income	$386	$502	$801	$2,248

The labor income also increased with an increase in acres of peas, but the relationship was not so striking as it was in the case of cabbage. Farms growing no peas failed to make interest on capital once in the five years (table 46). In 1922, farms growing on an average 1.8 acres of peas made better labor incomes than those growing 4 acres and more.

TABLE 46. RELATION OF ACRES OF PEAS TO LABOR INCOME, FIVE-YEAR AVERAGE

Acres of peas	Average acres of peas	Labor income					
		1921	1922	1923	1924	1925	Five-year simple average
No peas	0	$ 138	−$108	$ 323	$414	$1,219	$ 397
0.1 to 3.9	1.8	420	364	194	787	835	520
4.0 to 6.0	4.5	928	−132	401	56	2,059	662
More than 6.0	15.5	1,971	78	1,432	874	3,674	1,606

Acres of cabbage

In this area the abundant supply of rainfall and manure and the favorable soil result in high yields of cabbage. For the five years cabbage yields on the farms studied averaged 14 per cent better than the average for nine States that grew late cabbage, or 76 per cent better than for a group of Newfane, Niagara County, fruit and crop farms (table 47).

Farms growing no cabbage made an average labor income of $101. Farms with less than 3 acres made $379, those with from 3 to 5 acres made $806, and those with more than 5 acres made a labor income of $2225. As in the case of peas there was very little difference in the number of cows kept on the farms growing different acreages of cabbage. (Table 48.)

TABLE 47. COMPARISON OF CABBAGE YIELDS IN NINE STATES GROWING LATE CABBAGE, IN CHENANGO COUNTY, AND IN NIAGARA COUNTY, FIVE YEARS, 1921–1925

	Nine States*	Chenango County	Newfane, Niagara County†
	Yield per acre of cabbage (tons)		
1921	6.7	10.8	3.6
1922	10.1	9.7	5.2
1923	8.6	11.6	4.9
1924	10.1	10.0	7.7
1925	9.8	9.9	8.0
Average	9.1	10.4	5.9
Per cent	100.0	114.0	65.0

* Nine States growing late cabbage = 100.
† Data obtained from a study by G. P. Scoville.

TABLE 48. RELATION OF ACRES OF CABBAGE TO OTHER FACTORS, FIVE-YEAR AVERAGE

	Acres of cabbage			
	None	0.1 to 2.9	3.0 to 5.0	More than 5.0
Number of farm records	132	200	123	54
Acres of cabbage	.....	1.6	3.7	8.5
Yield of cabbage per acre (tons)	.....	11.1	10.5	10.8
Per cent of the income from crops	8.6	14.0	20.9	36.9
Man equivalent	2.1	2.0	2.4	2.9
Number of cows	23	19	24	26
Capital per farm	$14,400	$13,500	$17,800	$22,500
Labor income	$101	$379	$806	$2,225

Combined effect of both peas and cabbage on labor income

There is a marked relationship between the acres of the two crops combined and labor income. Farms with no cabbage and 8.5 acres of peas made a labor income of $692. Farms with no peas and 4.4 acres of cabbage made a labor income of $891. As a five-year average, farms having no cabbage and no peas made a labor income of –$25. Those with 9.2 acres of peas and 6.4 acres of cabbage, large acreages of both crops, made a labor income of $1852. (Table 49.)

The relationship between the two crops and labor income was more striking in years of favorable than in years of unfavorable crop prices. In 1922, when crop prices were low, farms with a large acreage of peas had lower returns than those with smaller acreages of peas. In 1925, when crop prices were high, it was profitable to have a large acreage of peas. In that year, farms growing no peas and no cabbage made an average labor income of $804, while those growing no peas and 3.8 acres of cab-

TABLE 49. RELATION OF ACRES OF PEAS AND ACRES OF CABBAGE TO LABOR INCOME, FIVE-YEAR AVERAGE

	Acres of cabbage		
	None	0.1 to 2.9	More than 2.9
Acres of peas	0	0	0
Acres of cabbage	0	1.6	4.4
Number of farms	82	114	77
Labor income	−$25	$321	$891
Acres of peas	2.0	1.7	2.1
Acres of cabbage	0	1.5	4.3
Number of farms	28	65	45
Labor income	$268	$357	$1,036
Acres of peas	8.5	10.1	9.2
Acres of cabbage	0	1.8	6.4
Number of farms	23	20	55
Labor income	$692	$761	$1,852

bage made a labor income of $1976. Farms with no cabbage and 5.0 acres of peas made $2003, while those with 8.4 acres of peas and 6.4 acres of cabbage made an average labor income of $3513. (Table 50.)

TABLE 50. RELATION OF ACRES OF PEAS AND ACRES OF CABBAGE TO LABOR INCOME, FIVE YEARS, 1921–1925

Acres of cabbage	Labor income		
	Acres of peas		
	None	0.1 to 3.9	More than 3.9
1921:			
No cabbage	−$391	$ 351	$ 187
0.1 to 2.9 acres	281	552	−392
More than 2.9 acres	942	1,518	1,512
1922:			
No cabbage	−$125	$121	−$1,007
0.1 to 2.9 acres	−336	282	−317
More than 2.9 acres	129	644	408
1923:			
No cabbage	−$467	−$170	−$ 53
0.1 to 2.9 acres	455	176	1,000
More than 2.9 acres	786	524	971
1924:			
No cabbage	$201	$568	$640
0.1 to 2.9 acres	251	713	−131
More than 2.9 acres	838	958	653
1925:			
No cabbage	$ 804	$ 376	$2,003
0.1 to 2.9 acres	931	646	2,488
More than 2.9 acres	1,976	2,009	3,513

Thruout the entire period, peas were relatively high priced compared with other products. The index of the price of peas compared with the 1910–1914 average ranged from 140 in 1924 to 248 in 1923 (table 51). There was a gradual increase in the acreage of peas. On the 54 farms studied for the five years, the acreage of peas increased from 0.8 acres per farm in 1921 to 2.8 acres in 1925, an increase of 250 per cent.

TABLE 51. CHANGES IN ACRES OF PEAS AND CABBAGE ON 54 FARMS, FIVE YEARS, 1921–1925

	1921	1922	1923	1924	1925
Acres of peas	0.8	1.3	1.7	1.9	2.8
Index of price of peas (1910–14 = 100)	244	219	248	140	206
Acres of cabbage	2.0	2.8	2.5	2.8	2.5
Index of price of cabbage	283	87	365	267	368

The index of the price of cabbage varied considerably from year to year, ranging from 87 in 1922 to 368 in 1925.

High prices for cabbage resulted in an increase in the acreage of cabbage the year following. This in turn was accompanied by lower prices, which again resulted in a smaller acreage the following year. With cabbage, however, there was no consistent increase in acreage as with peas.

Apparently cabbage was slightly more profitable than peas. Each year the farms growing the larger acreage of cabbage made the highest labor incomes. Farms growing no cabbage failed to make interest in three out of the five years studied, making over the five years an average labor income of $101. Those having more than 5 acres of cabbage made an average labor income of $2225. (Table 52.)

TABLE 52. RELATION OF ACRES OF CABBAGE TO LABOR INCOME, FIVE YEARS, 1921–1925

Acres of cabbage	Average acres of cabbage	Labor income					
		1921	1922	1923	1924	1925	Average
No cabbage	0	−$ 199	−$233	−$ 351	$ 167	$1,119	$ 101
0.1 to 2.9	1.6	309	−104	426	292	974	379
3.0 to 5.0	3.7	949	351	453	620	1,655	806
More than 5.0	8.5	4,290	187	1,408	1,209	4,032	2,225

Taking the data obtained by Dilworth Walker[3] as a basis, the following rates were applied for the expenses mentioned: pea picking, $0.38 per bushel; association charges, $0.06; freight, $0.20; cartage, $0.08; containers, $0.12; seed, $16.94 per acre; and commission charges, 10 per cent of the gross receipts. The total of these expenses averaged $157 per acre, leaving $88 as the receipts per acre.

Out of the $88 it was necessary to deduct all of the usual farm expenses for growing a crop, such as rent of land, equipment and buildings, wages

[3] Bulletin 475 of this experiment station, page 41.

for labor, cost of fertilizer, and other miscellaneous expenses. These expenses are common to both peas and cabbage and must be deducted from the $152 per acre received for cabbage as well as from the $88 per acre received for peas.

It is true that more labor is required to grow cabbage than to grow peas and that more fertilizer is used on cabbage than on peas. Despite this, the margin to the farmer between gross receipts and expenses, other than farm labor, per acre for the two crops leaves a balance in favor of cabbage. This accounts for the trends indicated in figure 12.

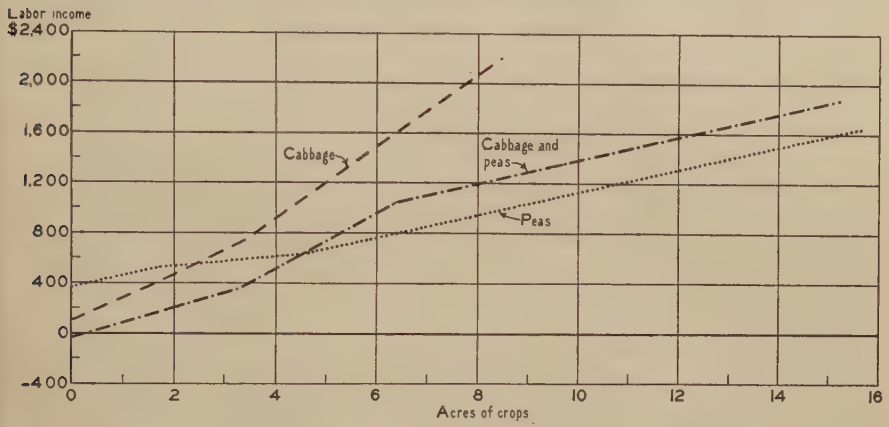

FIGURE 12. RELATION OF ACRES OF CASH CROPS TO LABOR INCOME

Elevation

Valley farms with better soils grew more cash crops, especially of the high-priced cash crops such as market peas, than did the hill farms. The total receipts from crop sales were therefore a larger percentage of the total farm income on valley farms than on hill farms. On the average 14 per cent of the income on hill farms came from crops sold; on the valley farms 17 per cent came from crops sold (table 53).

TABLE 53. RELATION OF ELEVATION TO PERCENTAGE OF INCOME FROM CROPS SOLD, FIVE YEARS, 1921–1925

	Per cent income from crops sold					
	1921	1922	1923	1924	1925	Five-year simple average
Hill	16	10	15	14	15	14
Valley	19	12	17	17	21	17

An increase in the acreage of peas and of cabbage caused an increase in the percentage of income derived from crops sold. Such increases were accompanied by increases in other factors. The larger the acreage of

cash crops grown, the more men were employed. With 4 per cent of the income from crops, 2.1 men, including the operator, were employed; with 17 per cent, 2.2; and with 40 per cent of the income from crops, 2.6 men were employed.

Along with an increase in number of men there was an increase in capital per farm. This was partly because the farms growing the cash crops had the best soils, often on land lying in the valley or closest to the station, and were consequently valued at a higher rate, and partly because a larger acreage of crops required a larger investment in equipment.

The increases in these factors were amply compensated by the increases in the labor income. Details are given in table 54:

TABLE 54. RELATION OF PERCENTAGE OF INCOME FROM CROPS SOLD TO OTHER FACTORS, FIVE-YEAR AVERAGE

	Per cent of income from crops sold		
	Less than 10	11 to 25	More than 25
Average per cent	4	17	40
Number of farms	226	173	110
Acres of peas	0.4	2.0	6.6
Acres of cabbage	1.3	2.7	4.1
Man equivalent	2.1	2.2	2.6
Capital per farm	$15,127	$16,277	$16,813
Labor income	$228	$579	$1,220

SIZE OF FARM BUSINESS

Some economists claim that it is relatively easier for farmers to change their operations than for other producers. They maintain that farmers can change from one product to another in case any particular product brings disappointing results. It must, however, be remembered that farmers are confronted with regional limitations such as climate, soil, and topography.

Some also maintain that farming is easily entered into and easily abandoned. This statement must be qualified. Farmers, especially those who had large businesses, suffered heavy losses during the period when the agricultural depression was at its height, but at that time the only way that most of them could have abandoned farming would have been by going into the hands of receivers, at a time when nobody was keen to start farming.

That there are always men looking for farms to rent or buy is true, but men are also willing to buy automobile and railroad stocks if prices are low. Farming implements and livestock are salable to other farmers but so are the implements and equipment of a manufacturing concern, if it is willing to take a large loss on its investment. The farmer has a larger investment in his business than many shareholders in large companies.

Furthermore, farming is a biological process and the adjustment to changing economic conditions cannot be made so rapidly as in industrial businesses. Nevertheless, adjustments do take place, either in reorganization of the enterprises for production on the farm or in reduction of expenses.

When prices are favorable, the method of increasing farm profits is by increasing output without giving great attention to expenses. On the other hand, in unfavorable times losses can be reduced by curtailing expenses and decreasing output.

Acres operated

The size of farms averaged 162.4 acres for the five years. In 1922 there were 150.6 acres per farm, of which 59.0 acres were in crops and 31.4 acres were in permanent pasture (table 55). In 1925 there were 168.8 acres per farm, with 66 acres in crops and 45.9 acres in permanent pasture.

TABLE 55. AVERAGE SIZE OF FARMS, FIVE YEARS, 1921–1925

	Average acres per farm				
	1921	1922	1923	1924	1925
Crop land	63.5	59.0	59.2	62.2	66.0
Woods pastured	14.4	10.8	11.5	13.5	14.1
Rotated pasture	1.0	0.2	0.7	0.3	0.1
Permanent pasture (tillable)	31.5	33.0	34.4	29.4	29.1
Other permanent pasture	39.6	31.4	40.5	42.7	45.9
Woods not pastured	9.4	8.2	10.7	9.2	8.5
Farmstead, roads, and so forth	7.8	8.0	5.8	5.4	5.1
Total	167.2	150.6	162.8	162.7	168.8

Nearly 70 per cent of the farms were 180 acres or less in size. The largest number, 152 of the 509 records, fell in the group ranging from 101 to 140 acres in size (table 56).

The capital per farm varied from $11,000 for farms averaging fewer than 100 acres to $23,000 for those more than 220 acres in size. The man equivalent was 1.7 and 2.9, respectively, while there were 15 and 32 cows respectively in those two groups. (Table 56.)

TABLE 56. RELATION OF SIZE OF FARM TO LABOR INCOME AND TO OTHER FACTORS, FIVE-YEAR AVERAGE

	Acres per farm				
	100 or less	101 to 140	141 to 180	181 to 220	More than 220
Number of records	100	152	100	65	92
Capital per farm (thousand dollars)	11	14	17	16	23
Man equivalent	1.7	2.0	2.4	2.5	2.9
Number of cows	15	19	24	24	32
Number of hens	101	107	92	119	148
Acres of peas	1.6	1.5	3.4	2.4	3.1
Per cent of cows freshening from September to December, inclusive	46	44	46	43	46
Milk produced per cow (hundredweight)	67	64	68	66	65
Labor income	$432	$655	$749	$228	$889

The influence of acres operated on labor income varied considerably from year to year. In years with unfavorable yields or prices, such as 1922, the farms more than 220 acres in size failed to make interest on capital; in a good year, as 1925, the highest labor income was made on these farms (table 57).

Expenses, such as interest on capital and cost of upkeep of buildings and equipment, remain constant irrespective of the yields or income from products. When receipts per farm are low, these expenses take most of it; when they are high, these expenses do not increase proportionately and the net returns are high.

TABLE 57. RELATION OF ACRES OPERATED TO LABOR INCOME, FIVE YEARS, 1921–1925

	Acres per farm				
	100 and less	101 to 140	141 to 180	181 to 220	More than 220
1921:					
Number of farms	23	36	23	17	22
Labor income	$275	$523	$199	$280	$194
1922:					
Number of farms	19	28	19	12	10
Labor income	$101	$288	$166	–$404	$–550
1923:					
Number of farms	20	29	16	10	20
Labor income	$505	$341	$798	–$558	$459
1924:					
Number of farms	20	26	14	13	18
Labor income	$413	$526	$638	$159	$642
1925:					
Number of farms	18	33	27	14	22
Labor income	$927	$1,490	$1,595	$1,490	$2,787
Total number of records	100	152	99	66	92
Five-year simple average:					
Acres per farm	82.9	122.1	160.3	196.6	296.3
Labor income*	$444	$634	$679	$193	$706

* The average shown in table 56 does not quite agree with this because that average is a weighted average.

Capital per farm

Capital invested in farming cannot be withdrawn so easily as that invested in industry and there was therefore only a slight variation in capital per farm. The average capital per farm was $15,835 for the five years. The lowest average capital was $15,011 in 1924; the highest was $16,586 in 1921 (table 58).

The capital per farm is influenced by several factors such as the number of cows, the number of acres in the farm, and the number of acres of crops, which in turn determine the amount of capital in machinery. Capital can, therefore, be taken as a composite factor of size of business.

Labor income increased with an increase in capital. Farms with less than $15,000 capital made a labor income of $534, those with from $15,001 to $25,000 capital made $600 and those with more than $25,000 capital

TABLE 58. SIZE OF BUSINESS, FIVE YEARS, 1921–1925

Measure of size of business	1921	1922	1923	1924	1925	Five-year simple average
Productive man work units per farm	573	540	529	602	639	577
Acres of crops per farm	63.5	59.0	59.2	62.2	66.0	62.0
Acres pastured per farm	74.5	67.0	78.0	85.1	89.2	78.8
Number of cows per farm	23.0	22.0	23.0	22.0	22.4	22.5
Number of hens per farm	75	89	120	125	152	112
Number of men per farm (including operator)	2.33	2.19	2.22	2.18	2.37	2.26
Capital per farm	$16,586	$16,080	$15,546	$15,011	$15,950	$15,835
Milk sold per farm (hundredweight)	1,308	1,299	1,438	1,322	1,484	1,370
Animal units per farm (excluding work animals)	29.7	29.2	29.7	28.4	29.5	29.3

made $724. The variation from year to year was great. The risk in a large business is high and in poor years large capital investment brought heavy losses but in good years the returns more than made up for the losses. In 1922, the most unfavorable year, farms with an average capital of $11,051 made a labor income of $179, those with an average capital of $37,800 made a labor income of −$686. In 1925, the most successful year, farms with an average capital of $11,140 made a labor income of $1130, while those with an average capital of $35,408 made a labor income of $3657 (table 59).

TABLE 59. RELATION OF CAPITAL PER FARM TO LABOR INCOME, FIVE YEARS, 1921–1925

	Capital per farm		
	$15,000 and less	$15,001 to $25,000	More than $25,000
1921:			
Number of farms	63	43	15
Average capital	$10,971	$18,898	$33,547
Labor income	$309	$456	−$22
1922:			
Number of farms	47	35	6
Average capital	$11,051	$19,123	$37,800
Labor income	$179	−$43	−$686
1923:			
Number of farms	53	34	8
Average capital	$10,755	$18,309	$35,550
Labor income	$424	$419	−$42
1924:			
Number of farms	56	29	6
Average capital	$11,029	$18,283	$36,367
Labor income	$629	$173	$712
1925:			
Number of farms	65	37	12
Average capital	$11,140	$18,097	$35,408
Labor income	$1,130	$1,993	$3,657
Total number of records	284	178	47
Five-year simple average:			
Capital	$10,989	$18,542	$35,734
Labor income	$534	$600	$724

Number of cows

Practically no change was made in the size of the most important enterprise, dairying. The animal units per farm varied from 28.4 to 29.7, the number of cows from 22 to 23, while the hundredweight of milk sold per cow varied from 1299 in 1922 to 1484 in 1925 (table 58).

Slight changes were made in the size of minor enterprises. More crops were grown in 1925 than in previous years. In 1922 there were 59 acres of crops per farm, in 1925 there were 66.0. The size of the poultry enterprise showed a steady increase, from 75 chickens per farm in 1921 to 152 in 1925 (table 58).

The labor income decreased slightly as the size of the dairy herd increased. There were some fluctuations in this relationship from year to year; in 1925 farms with more than 25 cows had an averaged labor income of $2113; where fewer than 16 cows were kept, the labor income was $1624. In that year, however, the labor income was more a result of crop sales than of returns from cows. There was an average loss of $15 per cow, and this loss is reflected in the labor income as follows: where fewer than 16 cows were kept, the labor income was $663; where from 17 to 25 cows were kept, the labor income was $553; and where more than 25 cows were kept, it was $519 (table 60).

TABLE 60. RELATION OF NUMBER OF COWS TO LABOR INCOME, FIVE YEARS, 1921–1925

	Number of cows per farm		
	16 and less	17 to 25	More than 25
1921:			
Number of farms	37	46	38
Number of cows	14	21	33
Labor income	$693	$150	$163
1922:			
Number of farms	29	35	24
Number of cows	15	21	32
Labor income	$38	$266	–$318
1923:			
Number of farms	29	37	29
Number of cows	14	21	33
Labor income	$483	$414	$243
1924:			
Number of farms	24	46	21
Number of cows	13	21	33
Labor income	$479	$538	$393
1925:			
Number of farms	33	47	34
Number of cows	13	21	34
Labor income	$1,624	$1,397	$2,113
Total number of records	152	211	146
Five-year simple average:			
Number of cows	14	21	33
Labor income	$663	$553	$519

Number of men

Labor, which was second in importance among the expense items, rises more slowly in times of rising prices but also falls more slowly in times of falling prices than do prices of other commodities. Prior to 1920 farmers paid relatively less for their hired help than they received for their products, but since 1921 prices received for their products have been lower than farm wages (figure 13).

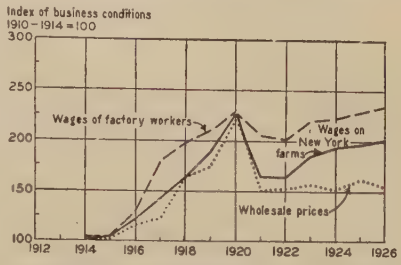

FIGURE 13. RELATION OF LABORER'S WAGES TO WHOLESALE PRICES

The Chenango Valley farmers made the first significant adjustment of their system of farming to the changing economic conditions by reducing their labor. In 1921 there were 2.33 men per farm, including the operator. This number decreased to 2.19 in 1922, and remained low until 1925. At first the productive man work units decreased both per farm and per man but as labor began to be used more efficiently the work units rose higher than in previous years. In 1921 the productive man work units per farm averaged 573 per farm and 246 per man. In 1923 it was 529 per farm and 238 per man; in 1925 it rose to 639 per farm and 270 per man.

The number of men per farm was higher on large than on small farms. Farms having fewer than 100 acres averaged 1.7 men, those having more than 220 acres averaged 2.9 men per farm. Details are given in table 61:

TABLE 61. RELATION OF ACRES PER FARM TO MAN EQUIVALENT, FIVE YEARS, 1921–1925

Acres per farm	Average number of acres per farm	Man equivalent					
		1921	1922	1923	1924	1925	Five-year simple average
100 acres and less.....	82.9	1.8	1.7	1.7	1.5	1.8	1.7
101 to 140.....	122.1	2.1	2.1	2.1	1.9	2.0	2.0
141 to 180.....	160.3	2.4	2.3	2.1	2.2	2.6	2.3
181 to 220.....	196.6	2.6	2.7	2.5	2.4	2.3	2.5
More than 220.....	296.3	3.0	2.7	2.7	2.9	3.2	2.9

Since labor is one of the most important items of expense, it should be used efficiently. An increase in size of business should not necessarily be accompanied by an increase in men employed. Altho it was found that the largest business averaged the highest labor income, those farms employing 2.4 men and less had a labor income of $593, while those employing more than 2.4 men had a labor income of $531 (table 62). The labor income for farms employing more than 2.4 men would have been less if the exceptional year in 1925 had not raised the average.

TABLE 62. RELATION OF MAN EQUIVALENT TO LABOR INCOME, FIVE YEARS, 1921–1925

	Man equivalent	
	2.4 and less	More than 2.4
1921:		
Number of farms	79	42
Labor income	$492	–$3
1922:		
Number of farms	63	25
Labor income	$127	–$209
1923:		
Number of farms	63	32
Labor income	$468	$216
1924:		
Number of farms	64	27
Labor income	$537	$375
1925:		
Number of farms	73	41
Labor income	$1,341	$2,274
Total number of records	342	167
Five-year simple average labor income	$593	$531

RETURNS FROM POULTRY

Number of hens

Most farms keep poultry. A farm flock always fits into the farm business without affecting the other enterprises because it is often cared for by the women and children. Even where the poultry industry is on a commercial scale the conflict is not very serious. The farmers in the Chenango area kept the same number of dairy cows where there were 214 hens per farm as where there were 26 hens and the production of milk per cow was equally good.

The percentage of the income from crops was affected by an increase in the number of hens per farm but mainly by an increase in the receipts per farm, which lowered the percentage that crops contribute to the whole

TABLE 63. RELATION OF NUMBER OF HENS TO OTHER FACTORS, FIVE-YEAR AVERAGE

	Number of hens		
	Less than 50	50 to 75	More than 75
Total number of records	216	79	214
Number of hens	26	64	214
Eggs sold per hen	25	65	89
Per cent of income from crops sold	18	15	15
Number of cows	23	19	23
Production per cow (hundredweight)	65	65	66
Labor income	$552	$329	$781

but did not affect the acreage or production of crops. It may be true that some of the grain and other crops produced is used by the poultry instead of being sold but the total effect is small. Details of the relation of the number of hens per farm to other factors are given in table 63.

During the agricultural depression the poultry enterprise was relatively more profitable than other enterprises, and more and more of the farmers turned to poultry farming on a commercial scale. Of 121 farms in 1921, 32 kept more than 75 hens (table 64). In 1925, 53 farms out of 114 kept more than 75 hens. Not only did the number of farms keeping more than 75 hens increase but the average number of hens per farm in that group also increased. In 1921 the average number of hens was 174, in 1925 it was 283, in the group keeping more than 75 hens.

TABLE 64. CHANGES IN POULTRY KEPT, FIVE YEARS, 1921–1925

	Number of hens		
	Less than 50	50 to 75	More than 75
1921:			
Number of farms	63	26	32
Number of hens	28	64	174
1922:			
Number of farms	38	16	34
Number of hens	25	63	173
1923:			
Number of farms	35	12	48
Number of hens	24	62	204
1924:			
Number of farms	38	6	47
Number of hens	26	64	212
1925:			
Number of farms	42	19	53
Number of hens	26	66	283

Eggs per hen

Eggs sold rather than poultry sold brought the profits to the poultry farmers and the production of eggs per hen was, therefore, important. Farms selling 6 eggs per hen made a labor income of $420, those selling 52 eggs made $615, and farms selling 115 eggs per hen made a labor income of $812 (table 65). As in the case of number of hens, the eggs sold per hen did not influence the other enterprises.

TABLE 65. RELATION OF EGGS SOLD PER HEN TO OTHER FACTORS, FIVE-YEAR AVERAGE

Eggs sold per hen	Average number of eggs sold	Per cent of income from crops sold	Number of cows	Production per cow, hundredweight	Labor income
Less than 25	6	19	24	64	$420
25 to 75	52	17	21	65	615
More than 75	115	14	22	68	812

Farmers who sell a large number of eggs per hen get higher cow production also than those who sell fewer eggs per hen.

Only the eggs sold per hen and not the production per hen are given in table 65. The commercial flocks, therefore, show up to greater advantage. A definite number of eggs are used on the farm and with an increase in the number of hens per farm a larger number of eggs per hen is available for sale.

It was of greater importance to have a high production of eggs per hen in commercial flocks than in farm flocks. If fewer than 50 hens were kept, the number of eggs sold per hen did not affect the labor income to any extent. If from 50 to 75 hens were kept, the labor income increased slightly with an increase in number of eggs sold per hen. On farms keeping a flock of more than 75 hens it was important to get a high production per hen. Farms selling fewer than 25 eggs per hen made a labor income of −$208, those selling from 25 to 75 eggs per hen made $687, and those selling more than 75 eggs made a labor income of $941 (table 66).

Stated in terms of production, farms selling more than 75 eggs made a labor income of $339 if there were fewer than 50 hens, $615 if there were from 50 to 75 hens, and a labor income of $941 if more than 75 hens were kept.

The better labor incomes, with a greater production per hen, on farms keeping more than 75 hens were only partly due to the greater production per hen, for these farms also had a better production of milk per cow. The farms selling 15 eggs per hen had a production of 5600 pounds of milk per cow, those selling 115 eggs had a production of 6800 pounds of milk per cow. Fully as much of the higher labor income was, therefore, due to better production per cow as was due to better production per hen. Details are given in table 66.

It is necessary to have a high production in commercial flocks because the costs are higher. The commercial flocks are housed in expensive modern poultry houses, whereas farm flocks are kept in barns and less costly buildings. More expensive food is given too, and more labor is spent on commercial flocks than on farm flocks. This makes the cost of keeping poultry on a large scale high, and the only way of making a profit on the enterprise is by obtaining a high production of eggs per hen.

LOCATION OF FARMS

Distance to market

Labor income was influenced also by the location of farms. Farms closer to the milk station, whether situated on the hills or in the valley, made better labor incomes than did those farther away.

Hill farms 1.5 miles or less from the milk station made a labor income of $799, those more than 1.5 miles made a labor income of $590. Valley farms 1.5 miles or less from the milk stations made a labor income of $692, those more than 1.5 miles made a labor income of $345 (table 67).

The cost of producing milk was lower for farms nearer the milk station. On valley farms there was no difference between the number of men employed per farm; but on hill farms those nearer the market employed

TABLE 66. RELATION OF NUMBER OF HENS AND EGGS PER HEN TO OTHER FACTORS, FIVE-YEAR AVERAGE

Eggs sold per hen	Number of hens		
	Less than 50	50 to 75	More than 75
Less than 25:			
Number of farms	154	14	14
Number of hens	22	60	170
Average number of eggs per hen	5	8	15
Per cent of income from crops sold	19	10	22
Number of cows	24	23	22
Production per cow (hundredweight)	65	67	56
Labor income	$533	–$195	–$208
From 25 to 75:			
Number of farms	38	37	69
Number of hens	35	65	181
Average number of eggs per hen	47	51	55
Per cent of income from crops sold	17	17	17
Number of cows	22	19	22
Production per cow (hundredweight)	66	64	65
Labor income	$774	$317	$687
More than 75:			
Number of farms	24	28	131
Number of hens	38	64	239
Average number of eggs per hen	119	112	115
Per cent of income from crops sold	14	17	14
Number of cows	19	18	23
Production per cow (hundredweight)	66	67	68
Labor income	$339	$615	$941

only 1.9 men, while those farther away employed 2.2 men. The extra distance on good valley roads can be covered with no increase in labor. The valley farms close to the milk station were valued higher than those farther from the market. Details are given in table 67:

TABLE 67. RELATION OF DISTANCE TO MARKET TO RETURNS ON HILL AND VALLEY FARMS, FIVE-YEAR AVERAGE

	Hill		Valley	
	0 to 1.5 miles	More than 1.5 miles	0 to 1.5 miles	More than 1.5 miles
Number of cows	19	23	23	22
Cost of milk	$2.47	$2.52	$2.51	$2.64
Number of hens	112	101	104	131
Capital per farm	$11,760	$12,440	$17,720	$16,340
Man equivalent	1.9	2.2	2.3	2.3
Labor income	$799	$590	$692	$345

Profitableness of hill and valley farms

The five-year average labor income on hill farms was $657, and on valley farms $568. On valley farms 17.3 per cent of the income, while on hill farms 14.1 per cent, came from crops sold. On valley farms the capital averaged $17,299 per farm, while on hill farms the capital averaged $12,146 per farm or 70.2 per cent of that on valley farms. Hill farms had an average farm income of $10 per $100 of capital, ranging from a farm income of $6 per $100 of capital in 1921 to $16 per $100 of capital in 1925 (table 68). The five-year average farm income on valley farms was $8 per $100 of capital, ranging from $5 per $100 of capital in 1922 to $15 per $100 of capital in 1925, a range of 300 per cent. Thus, in the first five years of the agricultural depression, the valley farms, with larger investment and a more intensive system of farming resulting from a larger acreage of cash crops, were less profitable than hill farms either per man or per unit of investment.

TABLE 68. RELATIVE PROFITABLENESS OF HILL AND VALLEY FARMS, FIVE YEARS, 1921–1925

	1921	1922	1923	1924	1925	Five-year simple average†
Hill						
Number of farms	35	20	26	26	43	150*
Number of cows per farm	23.5	17.8	22.1	22.3	20.5	21.2
Capital per farm	$13,760	$10,435	$12,077	$11,388	$13,070	$12,146
Number of hens	71	89	97	140	127	105
Production of milk per cow (hundredweight)	56.2	55.9	66.0	60.7	68.8	61.5
Per cent of income from crops	16.5	9.8	15.0	14.5	14.6	14.1
Farm income	$863	$937	$1,208	$1,221	$2,094	$1,265
Farm income per $100 invested	$6	$9	$10	$11	$16	$10
Labor income	$175	$415	$604	$652	$1,440	$657
Valley						
Number of farms	86	68	69	65	71	359*
Number of cows	22.3	23.2	22.7	21.3	23.5	22.6
Capital per farm	$17,737	$17,747	$16,854	$16,460	$17,699	$17,299
Number of hens	76	89	128	119	167	116
Production of milk per cow (hundredweight)	65.4	64.4	67.5	67.2	71.2	67.1
Per cent of income from crops	19.3	12.0	16.8	16.7	21.5	17.3
Farm income	$1,267	$806	$1,142	$1,247	$2,704	$1,433
Farm income per $100 invested	$7	$5	$7	$8	$15	$8
Labor income	$380	−$81	$299	$424	$1,819	$568

* Total number of records.

† There were 7 farms composed of both hill and valley land that were included in the hill group. In tables 42 and 67 these were included in the valley group.

The year 1921, when cash-crop prices were high, and the year 1925, when the price of milk and peas was relatively high, were the only two years that the valley farms, with better yields, were more successful than hill farms (figure 14).

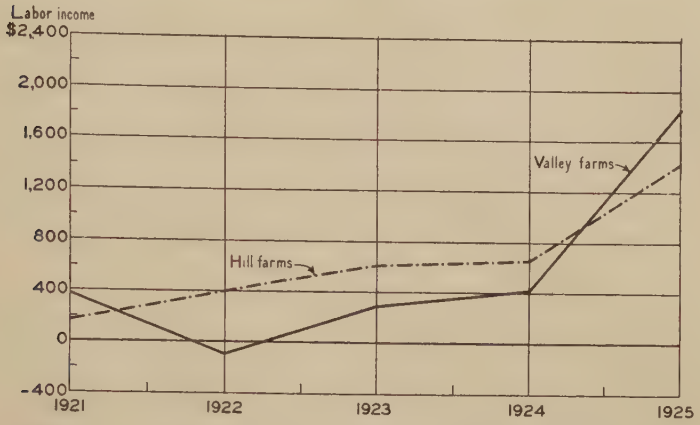

FIGURE 14. RELATIVE PROFITABLENESS OF HILL AND VALLEY FARMS

SUMMARY OF FACTORS INFLUENCING LABOR INCOME

As previously noted, the cost of milk, the balance or diversity of the business as indicated by the percentage of the income derived from crops, and the income from poultry, the size of business, and the location of the farms, all influenced labor income. While these factors were studied separately, it must be remembered that the combined influence of all marks the degree of success of the business as a whole. It is the best combination of these factors rather than the exceptional adjustment of any one, that is required to make the farm as a whole most profitable.

As in the case of the farm so also with a single enterprise, the factors contributing towards its success must be in correct combination before the enterprise will produce the highest net returns.

The cost of milk was dependent upon size of herd, whether the animals were purebred or grades, the per cent of cows freshening from September to December, inclusive, the production per cow, and many other factors of less importance. The variation from year to year in the percentage of the income derived from crops sold was due mainly to the variation in the acreages, yields, and prices received for cabbage and peas, the two leading cash crops of the area.

The farmer being only one of a large number of individual producers of similar products is more dependent upon regional and climatic conditions and more at the mercy of market conditions, than producers of manufactured products. Over a long period he can change from one enterprise to another. But the only quick method by which he can adjust his business to short-time fluctuations is by reducing costs relative to the prices of products.

The yearly fluctuations in the index number of prices of the three main livestock products produced in the Chenango area were not great (figure 15). Milk showed the smallest variation. The index number of the monthly average wholesale price of eggs in New York City decreased steadily until 1923 and then rose steadily. The index number of the monthly average prices of milk cows in New York State varied considerably from year to year. It was only in the last year that there was a

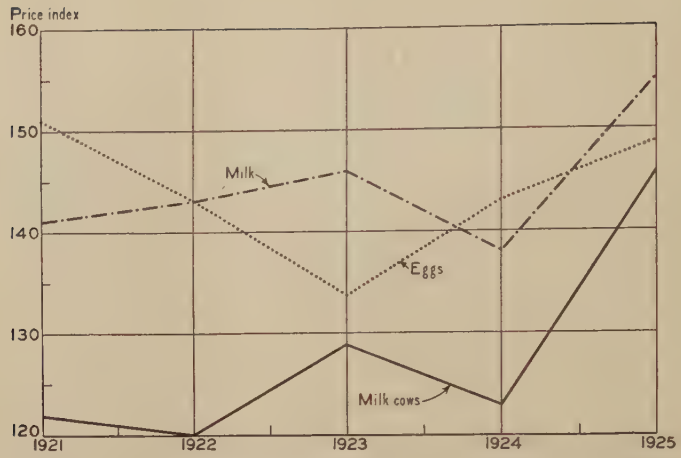

FIGURE 15. PRICE CHANGES OF THREE LIVESTOCK PRODUCTS, BY YEARS

marked increase in the price of cows. The index of the monthly price of milk at Utica runs parallel to that of cows but at a higher level. The index of the price of cows showed a slightly greater increase in 1925 than the price of milk.

The fluctuations of the index of the price of livestock and livestock products are less from year to year than are those of crops. Changes in the number of livestock kept are fewer than in the acreage of crops. The production per head of livestock is also less affected by changes in rainfall or temperature and, therefore, varies less than the yield per acre of crops. The widest variations were in cabbage prices. The index number of the prices paid to the New York farmers for cabbage for the months of October to December, inclusive, declined from 283 in 1921 to 87 in 1922 and ended in 1925 at 368 (figure 16).

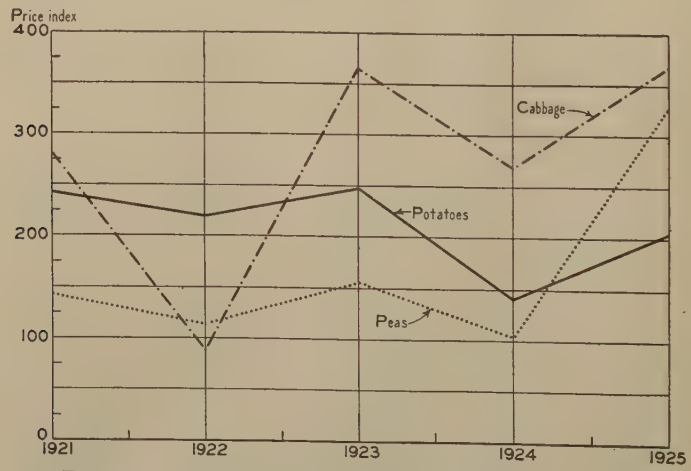

FIGURE 16. PRICE CHANGES OF THREE CROPS, BY YEARS

This again stresses the fact that producers may be able to make adjustments on the long-time tendencies in prices, but in any one year the price for crops is largely the result of the influence of weather on production. For the individual farmer the adjustment in organization and efficient operation of his business offers greater possibilities of increasing net returns than any attempt that he may make to adjust his production to the probable price.

CHANGES IN FARM PRACTICES

USE OF LABOR

As stated previously, the main method used by the farmers in the Chenango area to adjust their business to the agricultural depression was by changes in the use of labor. Not only were more productive work units performed per man but the productive horse work units per horse also increased from 62 in 1921 to 72 in 1925 (table 69).

The increase in the acres of crops per farm did not require a corresponding increase in the number of men and work animals. In 1921 there were 63.5 acres of crops per farm. In 1922 there were only 59 acres, but since then the number of acres of crops increased steadily until there were 66 acres per farm in 1925 (table 69).

TABLE 69. USE OF LABOR, VARIATION OF WORK UNITS, FIVE YEARS, 1921–1925

	1921	1922	1923	1924	1925	Five-year average
Average acres of crops per farm	63.5	59.0	59.2	62.2	66.0	62.0
Number of farms	121	88	95	91	114	509*
Productive man work units per farm	573	540	529	602	639	577
Man equivalent	2.33	2.19	2.22	2.18	2.37	2.26
Productive man work units per man	246	247	238	274	270	255
Productive horse work units, per work animal	62	64	63	66	72	65

* Total number of records.

USE OF EQUIPMENT

Ordinarily it can be expected that less money would be spent on building repairs and new buildings in hard times than when farmers are prosperous but there has not been any marked changes in the proportion of the total farm expense put into buildings. In 1921, 6 per cent of the farm expense went into buildings; in 1922 and 1924, 2.7 per cent was used for that purpose (table 70). On an average 3.8 per cent of the farm expense went into new buildings and building repairs. Part of this consistency in expenses on buildings may be explained by the large number of poultry houses that were put up in the last few years.

The expenses for new machinery averaged 4.3 per cent of the total

The highest expense on machinery averaged 5.2 per cent of the total in 1923; the lowest was 3.3 per cent in 1922 (table 70).

An average of $46 was spent per year for machinery repairs, about one-third the amount spent on new machinery per year. The largest amount spent on repairs was $63 per farm in 1921, the smallest was $32 in 1923 (table 70).

TABLE 70. EXPENDITURES FOR NEW BUILDINGS AND MACHINERY OR FOR REPAIRS, FIVE YEARS, 1921–1925

	1921		1922		1923		1924		1925		Five-year simple average	
	Expense per farm	Per cent of total farm expense	Expense per farm	Per cent of total farm expense	Expense per farm	Per cent of total farm expense	Expense per farm	Per cent of total farm expense	Expense per farm	Per cent of total farm expense	Expense per farm	Per cent of total farm expense
Buildings (repairs and new)	$213	6.0	$ 89	2.7	$168	4.6	$ 95	2.7	$129	3.0	$139	3.8
New machinery	125	3.5	107	3.3	186	5.2	157	4.6	201	4.8	155	4.3
Machinery repairs	63	1.8	45	1.4	32	0.9	41	1.2	49	1.2	46	1.3
Total	$401	11.3	$241	7.4	$386	10.7	$293	8.5	$379	9.0	$340	9.4

DAIRY-HERD PRACTICES

No great changes were made in the general practices in the dairy enterprise. There was a slight increase in the production per cow, but the number of cows remained about the same.

The increase in production per cow was to a large extent due to changes in the season of freshening. In 1921, 41 per cent of the cows freshened from September to December, inclusive. In 1923, 51 per cent freshene in that period, and after that no change took place. The increase in fa

TABLE 71. SEASON OF PRODUCTION AND REPLACEMENT OF DAIRIES, FIVE YEARS, 1921–1925

	1921	1922	1923	1924	1925	Five-year simple average
Per cent of cows freshening from September to December, inclusive	41	46	51	51	50	48
Per cent of milk sold, May, June, and July	28	29	27	29	28	28
Per cent of milk sold, August, September, and October	20	20	20	19	20	20
Per cent of milk sold, November, December, and January	24	24	26	25	25	25
Per cent of milk sold, February, March, and April	28	27	27	27	27	27
Per cent of cows replaced	22	28	28	26	36	28
Per cent of cows added that were purchased	34	47	48	30	64	45

freshening influenced the total production per cow but made practically no difference in the seasonal production. Twenty-eight per cent of the milk was produced in the three months, May to July, and only 20 per cent was produced from August to October.

On an average 28 per cent of the cows were replaced per year. In 1921 only 22 per cent were replaced, while in 1925, 36 per cent were replaced. In the Chenango area in 1925 several herds were tested for tuberculosis and the high percentage of replacements was probably due to this rather than to a change in practice. This is further borne out by the fact that in 1921, 34 per cent of the cows replaced were purchased; in 1925, 64 per cent were purchased. Details are given in table 71:

Feeding practices for cows did not vary greatly from year to year. An average of 2077 pounds of concentrates, 7371 pounds of silage, 994 pounds of succulent feed, and 3781 pounds of dry forage, were fed per cow. Details of the yearly variations are given in table 72:

TABLE 72. UNIFORMITY OF FEEDING PRACTICES, FIVE YEARS, 1921–1925

	Pounds per cow					
	1921	1922	1923	1924	1925	Five-year simple average
Concentrates	2,183	1,937	2,047	1,922	2,296	2,077
Silage	7,953	7,306	7,434	6,693	7,467	7,371
Other succulent feed	915	1,255	873	1,342	587	994
Dry forage	3,560	4,292	3,421	3,677	3,953	3,781
Total digestible nutrients (thousands of pounds)	6,471	7,110	6,150	6,320	6,640	6,538

FERTILITY PRACTICES

The farmers in this region with their large dairy herds had a plentiful supply of manure and the application per acre of crops averaged 4 tons (table 73). With only a slight variation from year to year in the number of cows kept, the supply of manure was constant. There was also only a slight increase in acres of crops; the application per acre, therefore, showed little change from one year to another, the lowest application being 3.7 tons per acre in 1924, and the highest 4.3 tons per acre in 1922. An average of $1.37 was spent on commercial fertilizers, the lowest being $1.26 per acre in 1921, the highest $1.47 per acre in 1922.

Soil fertility was, therefore, well maintained even in years when farm products were sold at a loss, mainly because, when the farmer begins his spring work, he has hopes that the coming crop year will be more favorable than the preceding year. The productive soil and the efficient soil fertility practices in the region are reflected in the crop yields. The crop index of all crops was 133 compared with the ten-year average production of the same crops in the state as 100. Corn for the silo had an index of 189, varying according to the seasons from 175 in 1924 to 216 in 1921. Details are given in table 73:

TABLE 73. USE OF MANURE AND FERTILIZER PER ACRE OF CROPS, FIVE YEARS, 1921–1925

	1921	1922	1923	1924	1925	Average
Manure applied per acre of crops (tons)	3.9	4.3	4.2	3.7	3.9	4.0
Fertilizer purchased per acre of crops	$1.26	$1.47	$1 34	$1.36	$1.41	$1.37
Crop index:*						
All crops	119	126	135	133	150	133
Corn for silo	216	178	190	175	184	189
Oats	93	87	113	131	127	110
Hay	102	124	126	123	120	119

* Compared with state ten-year average yields as 100.

ADJUSTMENTS ON IDENTICAL 54 FARMS STUDIED FOR FIVE CONSECUTIVE YEARS

To ascertain whether the adjustments previously discussed were made similarly on the same 54 farms that were studied each of the five years, a few factors have been compared.

On these 54 farms the acreage decreased from 159 in 1921 to 156 acres in 1922, but since then the farms have increased in size until they averaged 171 acres per farm in 1925 (table 74). For the five years the 54 farms averaged 162 acres farmed. The acres of peas grown increased from 0.8 acres per farm in 1921 to 2.8 acres per farm in 1925. The acres of cabbage varied from year to year but there was no marked increase over the five years.

Practically no change was made in the size of the dairy herd. In three of the five years there were 23 cows per farm, in the other two years there were 22 cows per farm. In the poultry enterprise there was a decided expansion. In 1921 there were 88 hens per farm. This number increased steadily until there were 169 hens per farm in 1925.

No change was made in the number of men employed on these farms over the five-year period. As the acreage of peas increased and more poultry was kept, it is clear that labor must have been used more efficiently in 1925 than in 1921.

The general tendency of the changes in the various factors on the 54 farms studied for five consecutive years is the same as that of all the farms studied. The 54 farms were, however, better than the average of all farms. The five-year average labor income for all farms was $580, that for the 54 farms was $687. Details are given in table 74:

TABLE 74. CHANGES OF IMPORTANT FACTORS OVER FIVE CONSECUTIVE YEARS ON 54 FARMS

	1921	1922	1923	1924	1925	Average
Acres operated	159	156	161	165	171	162
Acres of peas	0.8	1.3	1.7	1.9	2.8	1.7
Acres of cabbage	2.0	2.8	2.5	2.8	2.5	2.5
Number of cows	22	22	23	23	23	23
Number of hens	88	101	127	154	169	128
Man equivalent	2.3	2.2	2.3	2.3	2.3	2.3
Capital per farm	$17,600	$17,000	$16,900	$16,300	$16,400	$16,800
Labor income	$742	$65	$352	$575	$1,702	$687

During the five years these farms made changes in the grade of cows kept. In 1921 there were 19 farms with grade herds; in 1925, 17 farms kept only grades. Farms keeping purebred cows made several changes. In 1921 and 1925 there were 14 farms keeping purebreds, while in 1922, 1923, and 1924 there were 16. On these farms that kept purebred cows more cows were kept in 1925 than in 1921. (Table 75.)

TABLE 75. CHANGES IN GRADE AND NUMBER OF COWS PER FARM ON 54 FARMS, FIVE YEARS, 1921–1925

	1921		1922		1923		1924		1925	
	Number of farms	Number of cows	Number of farms	Number of cows	Number of farms	Number of cows	Number of farms	Number of cows	Number of farms	Number of cows
Grade cows	19	21	16	21	17	20	17	19	17	19
Grade and purebred cows	21	20	22	21	21	22	21	23	23	23
Purebred cows	14	24	16	25	16	26	16	26	14	26

It can be concluded that no striking changes were made in the farm organization or combination of enterprises to cope with changed conditions of high expenses and low prices for products. The size of the business as a whole was not changed. The most important enterprise, dairying, which was hardest hit, was not altered in the least.

Slight changes were made in two ways: first in the minor enterprises, such as the acreage of crops, especially peas, and the number of hens, and secondly in the operation of the farm by the more economic use of labor and the economizing on feed.

TENANCY

Of the 509 records that were taken in the five years, 121 were taken on tenant farms. Ninety-one were taken on share-rented and 30 on cash-rented farms.

In 1924 and 1925 two farms increased the size of business by renting additional land. Another farm changed from the share-rent to the cash-rent basis, because the son, who had been operating on a share basis with his father, rented the farm outright for cash.

Two farms changed from operator to share-rented farms. In these cases a father who had operated the farm alone gave the son an interest in the business by making him a partner. This is the first step by a farmer in the process of retiring from the business.

Four farms changed from share-rented to operator farms. In two cases the process of retiring was completed by the landlord handing over the entire business to a relative. In one case the tenant bought the farm from the landlord and in another case the farm was sold to an unrelated new operator.

RELATIVE PROFITABLENESS OF SHARE- AND CASH-RENTED FARMS [4]

From the tenants' point of view it paid better to rent a farm outright. Share tenants had an average labor income of $338 for the 4 years 1922 to 1925, inclusive; cash tenants averaged $1240. The range was wider on cash-rented than on share-rented farms.

[4] In figuring capital losses from year to year, 1921 was taken as a basis and the figures are recorded from 1922. To obtain a uniformity in tables and bases, the other tables all exclude the year 1921.

The hired men averaged $507 per year and therefore received $169 per year more than tenants on share-rented farms received. The hired man's income was not only higher than that received by the share tenant but was also more steady. His risk of heavy losses was comparatively small because his wages are paid monthly. Farmers unable to pay the hired man would let him go.

Landlords received a higher rate on their capital where they share rented their farms than where they rented them out for cash. The average rate of interest received on the landlord's capital was 6 per cent where the farm was run on shares and 3.5 where it was rented for cash (table 76).

TABLE 76. RELATIVE PROFITABLENESS OF SHARE- AND CASH-RENTED FARMS TO TENANTS AND LANDLORDS, FOUR YEARS, 1922–1925

Year	Number of farms		Labor income		Landlord's return		Cash wages to hired men
	Share rented	Cash rented	Share tenant	Cash tenant	Share rented	Cash rented	
1922	18	3	–$ 3	$ 932	2.7	3.3	$533
1923	17	5	452	657	6.8	3.7	475
1924	17	4	345	329	6.3	3.9	478
1925	21	13	560	3,040	7.0	3.1	542
Average	73*	25*	$338	$1,240	5.7	3.5	$507

* Total number of records.

As the landlord has to bear part of the losses on share-rented farms, part of the higher rate on his capital must be considered as compensation for risk. On the other hand he has some control over the farm practices and may prevent the tenant from ruining the soil fertility or from otherwise causing deterioration of the farm, whereas the landlord has little control over tenants renting the farm for cash. As a rule, therefore, landlords prefer to share rent.

The relative higher returns for tenants renting farms for cash than for those share-renting farms failed to draw the largest number of tenants into that group, because a tenant must have more capital if he desires to rent a farm outright than if he share rents a place. The average capital required by share tenants was $2453, that required by cash tenants was $9008 (table 77).

TABLE 77. TENANTS' CAPITAL, RECEIPTS, AND EXPENSES ON SHARE- AND CASH-RENTED FARMS, FOUR YEARS, 1922–1925

Year	Capital		Receipts		Expenses	
	Share tenant	Cash tenant	Share tenant	Cash tenant	Share tenant	Cash tenant
1922	$2,858	$ 4,528	$2,536	$5,899	$2,396	$4,741
1923	2,695	8,800	2,558	6,259	1,971	5,162
1924	2,184	12,143	2,323	6,550	1,869	5,614
1925	2,074	10,560	2,751	9,518	2,087	5,950
Average	$2,453	$9,008	$2,542	$7,056	$2,081	$5,367

For the four years the receipts of share tenants averaged $2542, their expenses averaged $2081. Cash tenants received $7056 and spent $5367. Details are given in table 77.

Details of the capital per farm, receipts, and expenses of landlords on share- and cash-rented farms for the four years 1922 to 1925, inclusive, are given in table 78:

TABLE 78. LANDLORDS' CAPITAL, RECEIPTS, AND EXPENSES ON SHARE- AND CASH-RENTED FARMS, FOUR YEARS, 1922–1925

Year	Capital		Receipts		Expenses	
	Share rented	Cash rented	Share rented	Cash rented	Share rented	Cash rented
1922	$17,157	$10,500	$2,159	$383	$1,699	$ 33
1923	13,652	9,900	2,407	394	1,484	29
1924	12,090	8,258	2,198	398	1,439	74
1925	13,202	7,247	2,677	332	1,751	107
Average	$14,025	$8,976	$2,360	$377	$1,593	$61

Heavy losses were suffered both by landlords and tenants during the period studied. These losses were written off every year, and in 1924 and 1925 the position of the landlords seemed to be more favorable than in the previous years. If, however, interest is calculated on the 1921 capital of landlords for each succeeding year, the returns for the four years were 4.6 per cent instead of 5.7 per cent on share-rented farms and 3.0 per cent instead of 3.5 per cent on cash-rented farms (table 79). As the tenants had increased their capital during these years, the corrected labor income on the 1921 base averaged $355 instead of $338 for share tenants and $1354 instead of $1240 for cash tenants.

TABLE 79. RELATIVE PROFITABLENESS OF SHARE- AND CASH-RENTED FARMS WHEN RETURNS ARE CALCULATED ON 1921 CAPITAL*

Year	Labor income		Landlords' per cent return	
	Share tenants	Cash tenants	Share tenants	Cash tenants
1922	$ 34	$ 822	2.8	3.4
1923	481	761	5.6	3.5
1924	348	600	4.6	3.1
1925	558	3,232	5.6	2.2
Average	$355	$1,354	4.6	3.0

* 1921 capital: share tenant $2128; cash tenant $6718; landlord, share rented, $16,435; landlord, cash rented, $10,318.

Deducting the capital losses from the labor income as calculated for each year the average labor income on share-tenant farms became $325 instead of $338 (table 80). The landlords suffered more and, if capital

loss is taken into account, they made −5.8 per cent on their capital instead of 5.7. In two years they wrote off more than $4000 on their capital. Details are given in table 80:

TABLE 80. RETURNS TO LANDLORDS AND TENANTS AFTER DEDUCTING CAPITAL LOSS, SHARE-RENTED FARMS, FOUR YEARS, 1922–1925

Year	Tenant's labor income			Landlord's rate earned		
	Labor income before deducting capital loss	Capital loss	Labor income after deducting capital loss	Rate earned before deducting capital loss	Capital loss	Rate earned after deducting capital loss
1922	−$ 3	+$730	+$727	2.7	+$ 722	+6.3
1923	+452	−163	+289	6.8	−3,505	−20.0
1924	+345	−511	−166	6.3	−1,562	−7.5
1925	+560	−110	+450	7.0	+1,112	+15.4
Average	+$338	−$13	+$325	5.7	−$808	−5.8

SUMMARY OF BUSINESS FACTORS

A summary of some of the most important business factors for the five years studied is given in table 81. These factors have been divided into various groups such as those considered in relation to the farm as a whole as size of business, type of business, and balance of business; those related to efficiency of operation as rate of production, labor efficiency, capital efficiency, and efficiency in feeding practices; and finally those related to results and to such factors as the cost of raising heifers.

TABLE 81. SUMMARY FOR COMPARING INDIVIDUAL FARMS WITH THE AVERAGES FOR FIVE YEARS, 1921–1925

	Average for 121 farms	Average for 88 farms	Average for 95 farms	Average for 91 farms	Average for 114 farms
Year of record, ending April 30	1922	1923	1924	1925	1926
County	Chenango	Chenango	Chenango	Chenango	Chenango
Labor income	+$321	+$32	+$383	+$489	+$1,676
Size of business:					
1. Acres of crops	63.5	59.0	59.2	62.2	66.0
2. Acres pastured (woods in equivalent of open pasture)	74.5	67.0	78.0	85.1	77.8
3. Number of cows, average	23	22	23	22	22
4. Number of men, including operator	2.33	2.19	2.22	2.18	2.37
5. Capital	$16,586	$16,080	$15,546	$15,011	$15,950
6. Hundredweight of milk sold per farm	1,308	1,299	1,438	1,322	1,484
Type of business:					
7. Average miles to milk station	1.8	2.6	1.6	1.7	1.7
8. Per cent of capital in:					
Real estate	67	67	67	66	66
Livestock	25	26	25	25	24
Equipment and supplies	8	7	8	9	10
9. Per cent of cows freshening from September to December, inclusive	40.8	45.7	50.9	50.9	49.6

TABLE 81 (*continued*)

	Average for 121 farms	Average for 88 farms	Average for 95 farms	Average for 91 farms	Average for 114 farms
Type of business:					
10. Per cent of milk sold during:					
May, June, July	28.0	28.7	27.3	28.8	28.2
August, September, October	19.7	19.9	20.2	18.7	20.4
November, December, January	24.4	24.1	25.9	24.7	24.7
February, March, April	27.9	27.3	26.6	27.8	26.7
11. Average weight of cows (pounds)	940	1,003	1,017	1,000	†
12. Average weeks cows are dry	8.2	8.3	8.0	8.0	†
13. Per cent of cows replaced	22.2	28.4	27.7	25.8	35.7
14. Per cent of cows added that were raised at home	66.0	53.1	51.5	69.7	36.3
15. Per cent of cows that were purchased	34.0	46.9	48.5	30.3	63.7
16. Average age of heifers when freshening for first time (months)	27.9	27.2	26.5	26.8	†
17. Grade of milk	Grade B	Grade B	Grade B	Grade B	Grade B
18. Per cent of milk produced which is sold	93.1	93.7	94.5	94.1	94.4
19. Per cent of milk kept at farm	6.9	6.3	5.5	5.9	5.6
Balance of business:					
20. Value of purchased fertilizer per acre of crops	$1.26	$1.47	$1.34	$1.36	$1.41
21. Labor distribution (good, fair, poor)	Good	Good	Good	Good	Good
22. Important sources of income, and receipts from each per farm:					
Milk	$2,740	$2,761	$3,061	$2,769	$3,427
Appreciation on cattle*	$528	$395	$106	$326	†
Crops sold	$1,043	$592	$1,027	$943	$1,837
23. Per cent of receipts from crops	20.5	13.0	19.6	19.1	24.9
Rate of production:					
24. Crop index, all crops (based on average yields for New York State)	119.1	126.2	134.8	132.8	149.8
25. Crop index:					
Corn for the silo	216.2	178.1	190.2	174.8	183.9
Oats (threshed)	92.6	86.9	112.6	131.0	126.7
Hay	102.3	123.6	125.5	122.6	119.9
26. Pounds of milk produced per cow	6,184	6,305	6,753	6,522	7,010
27. Pounds of milk sold per cow	5,759	5,910	6,380	6,136	6,618
28. Pounds of milk sold per dollar invested in cows	55	55	61	57	57
29. Value of milk and its products sold per cow	$121	$126	$136	$128	$158
30. Appreciation on cattle per cattle unit	$18.47	$14.19	$3.77	$12.09	†
Labor efficiency:					
31. Acres of crops per man	27.3	26.9	26.7	28.5	27.8
32. Acres of crops per work animal	17.2	16.3	16.5	17.6	18.6
33. Labor returns per man	$542	$404	$558	$625	$1,180
34. Hundredweight of milk produced per man	603	633	686	645	663
Human labor:					
Hours per cow per year:					
35. Hauling milk	15	12	13	12	†
Hours per 100 pounds of milk produced:					
36. For year	2.5	2.2	2.0	2.3	†
Capital efficiency:					
37. Value of machinery and equipment per acre of crops	$19.40	$18.58	$19.39	$19.60	$22.97
Feeding efficiency:					
Feed:					
Per cow per year:					
38. Concentrates (pounds)	2,183	1,937	2,047	1,922	2,296
39. Silage (pounds)	7,953	7,306	7,434	6,693	7,467
40. Other succulent feed (pounds)	915	1,255	873	1,342	587
41. Dry forage (pounds)	3,560	4,292	3,421	3,677	3,955
42. Days of pasture	160	161	158	161	†
Per cow per day during winter:					
43. Concentrates (pounds)	8.9	7.9	8.1	8.2	†
44. Silage (pounds)	35.5	33.2	34.7	31.9	†
45. Other succulent feed (pounds)	1.7	4.0	2.4	4.3	†
46. Dry forage (pounds)	17.1	20.7	16.1	17.6	†

* Includes value of calves born during year.
† Data not obtained.

TABLE 81 (*concluded*)

	Average for 121 farms	Average for 88 farms	Average for 95 farms	Average for 91 farms	Average for 114 farms
Feeding efficiency:					
Feed:					
Per 100 pounds of milk produced in pasture period:					
47. Days of pasture	6.3	6.1	5.9	6.1	†
48. Concentrates (pounds)	13.8	12.6	13.2	9.3	†
49. Silage and other succulent feed (pounds)	49.5	37.0	22.1	24.5	†
50. Dry forage (pounds)	2.5	2.9	2.8	3.1	†
Per 100 pounds of milk produced in winter period:					
51. Concentrates (pounds)	50.2	43.6	41.6	43.3	†
52. Silage (pounds)	198.9	183.9	177.4	168.2	†
53. Other succulent feed (pounds)	9.4	22.2	12.2	22.5	†
54. Dry forage (pounds)	95.7	114.5	82.2	92.8	†
Per 100 pounds of milk produced thru the year:					
55. Concentrates (pounds)	35.3	30.7	30.3	29.5	32.8
56. Silage (pounds)	128.6	115.9	110.1	102.6	106.5
57. Other succulent feed (pounds)	14.8	19.9	12.9	20.6	8.4
58. Dry forage (pounds)	57.6	68.1	50.7	56.4	56.4
Costs and returns for cows:					
59. Total costs per cow	$177	$169	$179	$170	$181
60. Returns, exclusive of milk sold wholesale	$30	$30	$23	$26	$27
61. Cost of milk sold per cow	$147	$139	$156	$144	$154
62. Value of milk sold, cash per cow	$113	$118	$131	$124	$152
63. Certificates of indebtedness per cow	$7	$8	$5	$4	$5
64. Gain or loss per cow	$27(loss)	$13(loss)	$20(loss)	$16(loss)	$3(gain)
65. Price received per 100 pounds of milk	$2.10	$2.12	$2.12	$2.09	$2.37
66. Cost of producing 100 pounds of milk	$2.56	$2.35	$2.44	$2.35	$2.32
67. Loss per 100 pounds of milk	$0.46	$0.23	$0.32	$0.26	$0.05(gain)
Cost of raising a heifer:					
68. To two years of age	$127	$97	$107	$93	†
69. To age of freshening (approximate)	$148	$109	$116	$105	†

† Data not obtained.

SIZE OF BUSINESS

Only three factors under size of business have shown marked changes in the five years: acres of crops, man equivalent, and capital per farm. The acres of crops increased, the man equivalent and capital per farm decreased.

TYPE OF BUSINESS

Two-thirds of the capital per farm was in real estate, one-fourth in livestock, and approximately one-tenth in equipment and supplies.

Dairying was the most important enterprise. Most of the farms attempted to have their cows freshen in the fall, and from 1923 approximately 50 per cent of the cows freshened from September to December, inclusive.

One-fourth of the dairy herd was replaced in 1922, 1923, and 1924; in 1921, 22 per cent was replaced; but in 1925, 36 per cent was replaced. Except in 1925, more than half of the herd was replaced by heifers raised on the farm. The year 1925 can be considered abnormal in many respects and, altho 64 per cent of the cows replaced in that year were purchased, the other four years can be considered as indicating the general practice in herd replacement more correctly. The farms studied produced Grade B milk and sold approximately 94 per cent of the milk produced.

BALANCE OF BUSINESS

About 60 per cent of the farm income was derived from dairy products and livestock sold, 20 per cent from the sale of crops, and 20 per cent from poultry and other miscellaneous receipts. The farm business in the Chenango region was, therefore, well balanced.

The winter dairying and poultry enterprise kept labor employed during the winter months and the distribution of labor was good.

With an adequate supply of manure and an average expenditure of $1.37 for commercial fertilizer per acre of crops, the soil fertility was well maintained.

RATE OF PRODUCTION

The maintenance of soil fertility was reflected to some extent in the yield of crops, which are high compared with New York State averages. The crop index for all crops ranged from 119 to 150 for the five years studied.

The production of milk per cow increased from 6184 pounds in 1921 to 7010 pounds in 1925, and the milk sold from 5759 pounds in 1921 to 6618 pounds in 1925. An average of 57 pounds of milk was sold per dollar invested per cow. The total value of milk and its products sold per cow increased from $121 in 1921 to $158 in 1925.

LABOR AND CAPITAL EFFICIENCY[5]

In addition to better yields of crops there was also a larger acreage of crops per man and per work animal in 1925 than in the other years. More machinery was used in 1925 per acre of crops. Labor was therefore more efficiently used, and this better use was reflected in a much higher labor return per man in 1925 than in previous years.

FEEDING EFFICIENCY[5]

More concentrates were used per cow in 1925 than in the other years, and 1921 was the only year in which more silage was fed per cow than in 1925.

An average of 32 pounds of concentrates, 113 pounds of silage, 15 pounds of other succulent feed, and 58 pounds of dry forage, were fed per 100 pounds of milk produced.

COSTS AND RETURNS FOR THE DAIRY ENTERPRISE

The total cost per cow ranged from $169 in 1922 to $181 in 1925; the cost of milk sold per cow varied from $139 in 1922 to $156 in 1923. The cost per 100 pounds of milk sold, however, was lower in 1925 than in any other year, and 1925 was the only year in which there was a gain per 100 pounds of milk sold.

COST OF RAISING A HEIFER[5]

The average cost of raising a heifer to the age of two years was $106 and to the age of freshening approximately $120.

[5] Some of the factors were not studied for the crop year 1925. In such cases the four-year averages were taken wherever such a figure was used.

SUCCESSFUL BUSINESSES

SOME SUCCESSFUL TYPES OF FARMS

In spite of the agricultural depression there were still individual farms and even types of farms that could have paid for themselves under prevailing economic conditions.

The depression seemed to be more severe on farms carrying on the dairy enterprise than on those with other enterprises. Over the five-year period the group of farms keeping fewer than 17 cows had $81 left after deducting 5 per cent interest on capital and the cash living costs of the operator and his family. Those keeping from 17 to 25 cows lacked $87 of paying interest and cash living expenses, while those keeping more than 25 cows lacked $358 (table 82).

TABLE 82. NET RETURNS FOR INVESTMENT ON DIFFERENT SIZED DAIRY HERDS FIVE-YEAR AVERAGE

	Number of cows		
	16 and less	17 to 25	More than 25
Average number of cows	14	21	33
Number of records	152	211	146
Capital per farm	$10,800	$14,900	$22,500
Interest on capital (at 5 per cent)	$540	$745	$1,125
Cash living costs	$616	$665	$952
Interest and cash living costs	$1,156	$1,410	$2,077
Farm income	$1,237	$1,323	$1,719
Balance for investment	$81	−$87	−$358

On farms growing less than 2 acres of cabbage, the farm income was not large enough to cover interest on capital and cash living expenses. This was true even where the farms had more than 9.2 acres of peas. Farms with no cabbage and 9.2 acres of peas lacked $196, those with 1.8 acres of cabbage and 9.2 acres of peas $30, of covering interest and cash living costs. Farms with no peas and 4.4 acres of cabbage had $147, those with 1.9 acres of peas and 4.3 acres of cabbage $209, and those with 9.2 acres of peas and 6.4 acres of cabbage $948, for reinvestment after paying interest and cash living expenses. (Table 83.)

TABLE 83. NET RETURNS FOR INVESTMENT ON FARMS WITH ACRES OF CABBAGE AND PEAS AS DESIGNATED, FIVE-YEAR AVERAGE

Acres of cabbage and peas	Number of records	Capital per farm	Interest on capital	Cash living costs	Farm income	Balance for investment
No cabbage and no peas	82	$14,200	$ 710	$786	$ 685	−$811
No cabbage and 1.9 peas	28	13,200	660	644	928	−376
No cabbage and 9.2 peas	23	18,200	910	888	1,602	−196
1.6 cabbage and no peas	114	14,400	720	679	1,041	−358
1.5 cabbage and 1.9 peas	65	12,000	600	656	957	−299
1.8 cabbage and 9.2 peas	20	13,900	695	791	1,456	−30
4.4 cabbage and no peas	77	20,600	1,030	744	1,921	+147
4.3 cabbage and 1.9 peas	45	15,600	780	827	1,816	+209
6.4 cabbage and 9.2 peas	55	20,800	1,040	904	2,892	+948

Hill farms 1.5 miles and less from the milk station had $191 for reinvestment after paying interest and cash living expenses. Valley farms and hill farms more than 1.5 miles from the station did not make enough to cover interest and cash living expenses. Details are given in table 84:

TABLE 84. NET RETURNS FOR INVESTMENT ON HILL AND VALLEY FARMS, FIVE-YEAR AVERAGE*

	Hill		Valley	
	0.1 to 1.5 miles	More than 1.5 miles	0.1 to 1.5 miles	More than 1.5 miles
Average distance to market	1.1	2.9	0.9	3.2
Number of records	74	76	217	142
Capital per farm	$12,200	$12,500	$17,900	$16,500
Interest on capital (at 5 per cent)	$610	$625	$895	$825
Cash living costs	$638	$666	$781	$743
Interest and cash living costs	$1,248	$1,291	$1,676	$1,568
Farm income	$1,439	$1,009	$1,471	$1,064
Balance for investment	$191	−$282	−$205	−$504

* There were 7 farms composed of both hill and valley land that were included in the hill group. In tables 42 and 67 these were included in the valley group.

The farm income is the difference between total farm receipts and farm expenses, excluding interest on capital and the cash living costs of the farmer and his family. If the cash living costs are deducted from the labor income, a fund is left from which the interest on capital and payments on mortgages or reinvestments may be made. This is the amortization fund. The amortization period is the time it will take to pay off the original capital after allowing for interest at 5 per cent on the outstanding capital. For example, in the case of the dairy farms with 16 cows or less, given in table 85, $621 paid annually for forty-four years will cover interest at 5 per cent on the capital, $10,800, and retire the original capital.

The periods required for amortizing capital on the different successful types of farms are given in table 85. Farms could have been paid for most quickly where a large acreage of peas as well as a large acreage of cabbage was grown (table 85).

TABLE 85 AMORTIZATION PERIOD FOR THE DIFFERENT SUCCESSFUL TYPES OF FARMING*

	Capital per farm	Amortization fund†	Amortization period (years)
Farms with 16 cows and less	$10,800	$ 621	44
Hill farms 1.5 miles and less from station	12,100	962	21
Farms with no peas and 4.4 acres of cabbage	20,600	1,177	43
Farms with 1.9 acres of peas and 4.3 acres of cabbage	15,600	989	30
Farms with 9.2 acres of peas and 6.4 acres of cabbage	20,800	1,988	16

* Interest rate taken at 5 per cent.
† Interest plus balance shown in previous tables.

FIVE MOST SUCCESSFUL FARMS

Just as it was important to find types of farms that could pay for themselves so it is of value to study some of the important factors on a few successful farms.

Farm no. 384 was the most successful farm, making a five-year average labor income of $2470. This was a large business with an average capital of $33,662, employing 4.4 men per year, including the operator. It was well diversified and raised 132.9 acres of crops in addition to keeping 36 cows, of which the greater number was purebred. Thirty-six per cent of its income came from crops and 38.5 per cent from milk. An average of 72.8 per cent of the cows freshened from September to December, inclusive. The average production of milk per cow was 7925 pounds of milk. (Table 86.)

TABLE 86. FACTORS FOR THE FIVE FARMS HAVING THE LARGEST FIVE-YEAR AVERAGE LABOR INCOMES

	Farm number 384	Farm number 448	Farm number 442	Farm number 417	Farm number 387
Years of records	1921–1925	1921–1925	1921–1925	1921–1925	1921–1925
County	Chenango	Chenango	Chenango	Chenango	Chenango
Labor income	$2,470	$2,320	$1,911	$1,887	$1,830
Acres of crops	132.9	129.1	57.9	40.3	64.1
Number of cows, average	35.9	43.0	26.7	18.2	22.0
Number of men including operator	4.4	4.6	2.4	1.6	2.6
Capital	$33,662	$40,865	$23,074	$10,318	$16,454
Hundredweight of milk sold per farm	2,702	2,869	1,785	1,417	1,267
Average miles to milk station	1.3	3.5	3.4	0.2	2.0
Per cent of capital in:					
Real estate	62.4	61.4	55.9	64.8	77.8
Livestock	30.6	35.5	36.0	29.8	16.4
Equipment and supplies	7.0	3.1	8.1	5.4	5.8
Per cent of cows freshening from September to December, inclusive	72.8	34.6	60.4	55.9	54.8
Average weight of cows (pounds)	1,180	1,040	1,140	1,020	1,100
Grade of milk	Grade B	Grade B	Grade B	Grade B	Grade B
Important sources of income and receipts from each:					
Milk	$5,761	$6,086	$3,701	$3,487	$2,708
Crops	$5,376	$2,605	$1,549	$394	$3,788
Per cent of income from crops	36	19	15	6	44
Pounds of milk produced per cow	7,925	7,639	7,607	8,020	6,093
Pounds of milk sold per cow	7,478	6,740	6,879	7,746	5,768
Value of milk and its products sold per cow	$159	$142	$144	$189	$124
Hundredweight of milk produced per man	666	701	876	928	550
Price received per 100 pounds	$2.11	$2.11	$2.08	$2.43	$2.15
Cost of producing 100 pounds of milk	$2.12	$1.99	$1.92	$2.25	$2.44

Farm no. 448 made a five-year average labor income of $2320. The business was slightly larger than that of farm no. 384. The average capital was $40,865, and the average number of men, including the operator, was 4.6. It kept 43 cows and raised 129 acres of crops. This farm received 19 per cent of its income from crops. Only 34.6 per cent of the cows freshened in the fall. The average production per cow was 7639 pounds of milk. The cost of producing milk was low, the gain being 12 cents per 100 pounds of milk produced.

Farm no. 442, a medium-sized business with $23,074 capital and 2.4 men, including the operator, made a labor income of $1911. It kept 27 cows, raised 57.9 acres of crops, and received 15 per cent of its income from crops. An average of 60.4 per cent of the cows freshened in the

fall. The production per cow was 7607 pounds of milk. With a low cost, this farm made 16 cents per 100 pounds of milk produced.

Farm no. 417 had a small business, with an average of $10,318 capital and 1.6 men, including the operator. It made an average labor income of $1887. Only 6 per cent of its income was derived from crops, while milk contributed 53 per cent. On an average, 55.9 per cent of the cows freshened in the fall. This farm received a better production of milk per cow, 8020 pounds, than any of the other four farms, and also received a better price for its milk, gaining 18 cents per 100 pounds of milk produced.

The average labor income on farm no. 387 was $1830. The capital averaged $16,454, and 2.6 men, including the operator, were employed. Twenty-two cows were kept and 64.1 acres of crops were grown. This farm received 44 per cent of its income from crops. This was a larger percentage of the income than that received from milk. Altho 54.8 per cent of the cows freshened in the fall, the production per cow averaged only 6093 pounds of milk. The cost of producing milk was higher than on the other four farms and this farm lost 29 cents per 100 pounds of milk produced.

Summary of five successful farms

These five successful farms are representative of the different types of farms of the region. Two were large farms, one relying mainly on the dairy herd for its income, the other receiving as much from crops as from dairying. Two were small farms, one receiving 53 per cent of the income from dairying and 6 per cent from crops, the other 44 per cent from crops. This proves that no definite size or type of farm yields the best results. The internal organization and operation of a farm and not the type of business is mainly responsible for success or failure.

A WELL-BALANCED BUSINESS

To ascertain the most important factors in the organization of the Chenango Valley farms, the study has been analytical thruout. Most of the factors have been discussed. Now it may prove of value to make a synthetical study; that is, to build up a hypothetical farm and farm business on the basis of the most important factors. In doing this no attempt was made to get a successful farm. Conservative yields and prices of products were used. The expenses were the average, or slightly more than average, expenses for the five years. Every assumption was made on the basis of the most successful factors.

A farm within 1.5 miles from the milk station with suitable soil for growing both cabbage and peas was used. Since the farms employing 2.4 men or fewer were more successful than those keeping more men, it was decided to use a farm that could be successfully operated by 2.4 men, including the operator. As dairy herds averaging less than 17 cows per farm proved more successful than those keeping more cows, it was decided to keep a small number of cows. There was, however, a limit to the number of acres of crops that could be raised by 2.4 men, and to keep labor efficiently and fully employed it was decided to keep 20 cows. It was also assumed that a man could raise 28.75 acres of crops, which is a little more than the five-year average for the region. This gave a total crop acreage of 69 acres. After making adjustments according to the average acreages over the five years, the size of the farm came to 162 acres.

TABLE 87. PRODUCTION AND DISTRIBUTION OF CROPS

Kind of crop	Acres	Yield per acre	Total yield	Amount fed to cows	Value per unit	Value charged to cows	Amount fed to heifers	Amount fed to bull	Amount fed to horses	Amount sold	Price per unit	Value
Corn for silo	10	11	110	96	$ 6 tons	$576	12 tons	2 tons	.....	.....	.....	.....
Oats	8	35	280	.....	30 tons	.....	50 bushels	30 bushels	200 bushels	.....	.....	.....
Mixed hay (clover)	10	1.7	17	.....	12 tons	.....	6 tons	1 ton	10 tons	.....	.....	.....
Mixed hay (other)	24	1.5	36	32	12 tons	384	4 tons	.....	.....	.....	.....	.....
Cabbage	7	10	70	.....	.....	.....	.....	.....	.....	70	$15*	$1,050
Peas	10	135	1,350	.....	.....	.....	.....	.....	.....	1,350	1.44†	1,944
Total	69	.....	.....	.....	.....	$960	.....	.....	.....	.....	.....	$2,994
Woods pastured	10											
Permanent pasture	72											
Woods not pastured	6											
Farmstead and so forth	5											
Total acres operated	162											

*Average price, five years.
†1925 price.

In the first place sufficient silage and dry forage had to be raised to care for 20 cows. Applying the average tons of feed used per cow on the basis of milk production and the average yields per acre of silage and hay, it was found that 52 acres of crops would be required for the livestock, leaving 17 acres for cash crops. Details of the acreage, yields, and distribution of crops are given in table 87.

A mixed herd of grades and purebreds gave the best returns, so it was decided to keep such a mixed herd rather than purebred cows only. This would make the system more elastic and enable the operator to go over to a purebred herd gradually if there were signs of improvement in the business. As a five-year average, 28 per cent of the herd was replaced per year. Forty-four per cent of those replaced were purchased. With these facts in mind, the livestock table was constructed (table 88). For greater diversification 500 hens were added to the business. Poultry does not interfere with other farm operations and fits well into the system as a whole. Details are given in table 88:

TABLE 88. INVENTORY OF LIVESTOCK

Kind of livestock	Number	Value per head	Total value	Purchases		Sales	
				Number	Value	Number	Value
Grade cows	12	$125	$1,500	2	$250	2	$160
Purebred cows	8	175	1,400	....	.....	3	240
Yearling heifers	3	75	225	....	.....	....	.....
Calves	4	25	100	....	.....	14	70
Purebred bull	1	200	200	....	.....	....	.....
Horses	4	150	600	....	.....	....	.....
Hens	500	1.50	750	....	.....	150	150
Baby chicks	....	.....	.....	600	90	....	.....
Broilers	....	.....	.....	....	.....	150	75
Total	....	.....	$4,775	....	$340	....	$695

In order to check the efficiency in the use of labor, the productive work units, as determined from cost accounts, were applied to the enterprises. The organization of the business as discussed above would provide less work per man than the five-year average but would give more work per horse (table 89).

TABLE 89. PRODUCTIVE WORK UNITS PERFORMED PER YEAR

Enterprise	Acres or number	Productive man work units		Productive horse work units	
		Units	Total	Units	Total
Corn for silo	10	5	50	6	60
Oats	8	2	16	3	24
Hay	34	1	34	1	34
Cabbage	7	10	70	10	70
Peas	10	2	20*	3	30
Cattle	20	15	300	2	40
Young stock	7	2	14	0.1	0.7
Mature poultry	500	0.15	75	0.02	10
Young poultry	500	0.005	3	0.02	10
Total	.....	.....	582	.....	278.7

* Excluding picking.

The distribution of human labor by months and by enterprises is given in table 90 and in figure 17. That for horse labor is given in table 91.

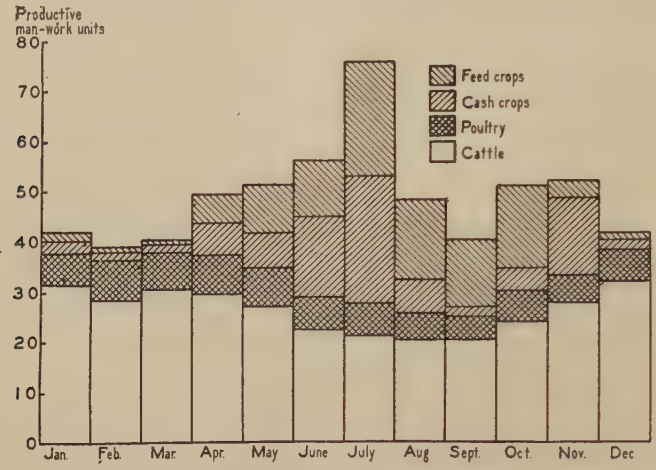

FIGURE 17. PRODUCTIVE MAN-WORK UNITS ON THE HYPOTHETICAL SUCCESSFUL FARM

TABLE 90. DISTRIBUTION OF PRODUCTIVE MAN WORK UNITS

	Corn for silo	Oats	Hay	Cabbage	Peas	Cattle	Mature poultry	Young poultry	Total
January:									
Per cent	.....	0.6	2.1	3.4	.....	10.0	9.3	0.3	.....
Man work units	.....	0.1	0.7	2.4	.....	31.4	7.0	0.0	41.6
February:									
Per cent	.....	0.1	2.3	2.1	0.4	9.1	10.7	0.4	.....
Man work units	.....	0.0	0.8	1.5	0.1	28.6	8.0	0.1	39.1
March:									
Per cent	0.1	0.5	1.8	2.6	3.2	9.8	9.4	7.8	.....
Man work units	0.0	0.1	0.6	1.8	0.6	30.8	7.1	0.2	41.2
April:									
Per cent	2.9	18.5	2.6	2.1	23.3	9.3	10.1	19.8	.....
Man work units	1.5	3.0	0.9	1.5	4.7	29.2	7.6	0.6	49.0
May:									
Per cent	14.0	14.5	1.7	6.7	9.0	8.5	9.4	19.6	.....
Man work units	7.0	2.3	0.6	4.7	1.8	26.7	7.1	0.5	50.7
June:									
Per cent	18.0	1.0	4.4	21.2	5.6	7.0	8.1	15.1	.....
Man work units	9.0	0.2	1.5	14.8	1.1	22.0	6.1	0.4	55.1
July:									
Per cent	11.2	0.6	50.0	22.6	46.3	6.8	7.7	10.1	.....
Man work units	5.6	0.1	17.0	15.8	9.3	21.3	5.8	0.3	75.2
August:									
Per cent	3.4	33.7	25.1	6.4	8.6	6.6	6.7	8.3	.....
Man work units	1.7	5.4	8.5	4.5	1.7	20.7	5.0	0.3	47.8
September:									
Per cent	16.4	18.5	5.7	2.0	2.0	6.6	5.7	8.3	.....
Man work units	8.2	3.0	1.9	1.4	0.4	20.7	4.2	0.3	40.1
October:									
Per cent	31.0	5.3	1.1	6.1	0.7	7.6	6.7	7.7	.....
Man work units	15.5	0.9	0.4	4.3	0.1	23.9	5.0	0.2	50.3
November:									
Per cent	2.4	4.8	0.8	22.5	0.5	8.7	7.5	2.4	.....
Man work units	1.2	0.8	0.3	15.7	0.1	27.3	5.6	0.1	51.1
December:									
Per cent	0.6	1.9	2.4	2.3	0.4	10.0	8.7	0.2	.....
Man work units	0.3	0.1	0.8	1.6	0.1	31.4	6.5	0.0	40.8
Total:									
Per cent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	.....
Man work units	50	16	34	70	20	314	75	3	582

TABLE 91. DISTRIBUTION OF PRODUCTIVE HORSE WORK UNITS

	Corn for silo	Oats	Hay	Cabbage	Peas	Cattle	Mature poultry	Young poultry	Total
January:									
Per cent	.....	0.6	2.1	3.4	.....	10.0	9.3	0.3	.....
Horse work units	.....	0.1	0.7	2.4	.....	4.1	0.9	0.0	8.2
February:									
Per cent	.....	0.1	2.3	2.1	0.4	9.1	10.7	0.4	.....
Horse work units	.....	0.0	0.8	1.5	0.1	3.7	1.1	0.1	7.3
March:									
Per cent	0.1	0.5	1.8	2.6	3.2	9.8	9.4	7.8	.....
Horse work units	0.1	0.1	0.6	1.8	1.0	4.0	0.9	0.8	9.3
April:									
Per cent	2.9	18.5	2.6	2.1	23.3	9.3	10.1	19.8	.....
Horse work units	1.7	4.5	0.9	1.5	7.0	3.8	1.0	2.0	22.4
May:									
Per cent	14.0	14.5	1.7	6.7	9.0	8.5	9.4	19.6	.....
Horse work units	8.4	3.5	0.6	4.7	2.7	3.5	0.9	2.0	26.3
June:									
Per cent	18.0	1.0	4.4	21.2	5.6	7.0	8.1	15.1	.....
Horse work units	10.8	0.2	1.5	14.8	1.7	2.9	0.8	1.5	34.2
July:									
Per cent	11.2	0.6	50.0	22.6	46.3	6.8	7.7	10.1	.....
Horse work units	6.7	0.1	17.0	15.8	13.9	2.8	0.8	1.0	58.1
August:									
Per cent	3.4	33.7	25.1	6.4	8.6	6.6	6.7	8.3	.....
Horse work units	2.0	8.1	8.5	4.5	2.6	2.7	0.6	0.8	29.8
September:									
Per cent	16.4	18.5	5.7	2.0	2.0	6.6	5.7	8.3	.....
Horse work units	10.0	4.4	1.9	1.4	0.6	2.7	0.6	0.8	22.4
October:									
Per cent	31.0	5.3	1.1	6.1	0.7	7.6	6.7	7.7	.....
Horse work units	18.6	1.3	0.4	4.3	0.2	3.1	0.8	0.8	29.5
November:									
Per cent	2.4	4.8	0.8	22.5	0.5	8.7	7.5	2.4	.....
Horse work units	1.4	1.2	0.3	15.7	0.1	3.6	0.7	0.2	23.2
December:									
Per cent	0.6	1.9	2.4	2.3	0.4	10.0	8.7	0.2	.....
Horse work units	0.3	0.5	0.8	1.6	0.1	4.1	0.9	0.0	8.3
Total:									
Per cent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	.....
Horse work units	60	24	34	70	30	41	10	10	279

The efficiency of this distribution is illustrated in figure 17.

A high percentage of cows freshening from September to December, inclusive, gave a high production of milk per cow. It was assumed that it would be possible to have 60 per cent of the herd freshen in the fall and have a production of 8000 pounds per cow. That would give a total production of 160,000 pounds. An average of 94 per cent of the milk produced was sold. Details of the seasonal distribution of milk and the average prices are given in table 92.

TABLE 92. SEASONAL DISTRIBUTION OF MILK

	Hundredweight of milk sold	Average price	Value
May, June, July	421	$1.88	$791
August, September, October	301	2.34	704
November, December, January	376	2.59	974
February, March, April	406	2.26	918
Total	1,504	$2.25	$3,387

The data obtained on the poultry enterprise in the study of the Chenango area farms were inadequate for calculating costs and returns of producing eggs. Data obtained in a study of 153 farms in New York State for 1925 have, therefore, been used to determine the importance of the poultry enterprise.[6]

Of the 500 hens kept, 300 were taken to be pullets and 200 as old hens. It was found that pullets produced an average of 146 eggs per bird while old hens produced 120 eggs. Of the eggs produced by old hens, 80 per cent were large eggs; of those produced by pullets, 46 per cent were large eggs. The prices taken were the average of the daily prices for medium and pullets eggs in the New York City market for 1926 to 1927 less 2 cents for express. This gave a price of 35.5 cents per dozen for medium eggs and 30.9 cents for pullets' eggs. The prices of eggs were favorable in 1926 to 1927. Details are given in table 93:

TABLE 93. PRODUCTION AND DISTRIBUTION OF EGGS

	Old hens	Pullets
Number	200	300
Eggs per bird	120	146
Per cent of eggs, large grade	80	54
Number of large-grade eggs	19,200	23,652
Per cent of eggs, pullet grade	20	46
Number of pullet-grade eggs	4,800	20,148
Total number of eggs produced	24,000	43,800
Price per dozen, large eggs on farm (cents)	35.5	35.5
Price per dozen, pullet eggs on farm (cents)	30.9	30.9
Total value of eggs sold	$692	$1,219

The total farm expenses amounted to $6215. To determine such rates as labor, price of feed, fertilizer used, and taxes, the five-year average costs were taken. In the case of poultry feed, the rates and prices found in the study of poultry farms were used; in the case of peas, those obtained in a study of the costs of producing and marketing peas were used. Details are given in table 94:

[6] Economic studies of poultry farming in New York. By E. G. Misner, E. R. Johnson, and D. R. Marble. (Mimeographed report.)

TABLE 94. FARM EXPENSES

Item	Rate	Value
Labor hired	$60 per month	$1,080
Board of labor	$20 per month	240
Buildings (new and repairs)	*	150
Pea picking	$0.38 per bushel†	513
Commission	10 per cent†	194
Association dues	$0.06 per bushel†	81
Freight and cartage	$0.28 per bushel†	378
Containers	$0.12 per bushel†	162
Poultry feed	‡	1,197
Salt	*	10
Cow feed	$42*	1,066
Fencing	*	17
Fertilizer	$1.37 per acre*	95
Horseshoeing	*	60
Insurance	*	43
Machinery (repairs)	*	50
Machinery (new)	*	155
Threshing	$0.06§	17
Coal, oil, gasoline	*	52
Automobile upkeep	*	75
Ice	*	5
Milk cans, etc	*	12
Registration fees	*	6
Grass seed	*	44
Other seed	Peas $16.94 per acre, other cabbage and corn†	209
Telephone	*	24
Taxes	$1.33 per acre*	215
Veterinary	*	20
Miscellaneous	*	45
Total		$6,215

* Average over 5 years.
† Bulletin 475 of this experiment station.
‡ Economic studies of poultry farming in New York. By E. G. Misner, E. R. Johnson, and D. R. Marble. (Mimeographed report.)
§ Prices prevailing 1925.

To determine the costs of the dairy herd, the five-year average costs per cow were taken for each item, except that of concentrates. For concentrates, the cost was transferred from farm expenses. In the case of returns, the figures calculated previously were used, except for manure and miscellaneous returns. The latter items were arrived at from the five-year average.

The total costs per cow amounted to $190.20, the returns to $196.40, giving a gain of $6.20 per cow (table 95). The costs per 100 pounds of milk sold were $2.53, the returns $2.61, and the gain was $0.08.

TABLE 95. COSTS AND RETURNS ON DAIRY HERD

	Costs per cow	Costs per 100 pounds of milk sold
Costs:		
Concentrates and salt	$53.55	$0.71
Succulent feed	28.80	0.38
Dry forage	19.20	0.26
Pasture	7.75	0.10
Bedding	1.45	0.02
Human labor	36.35	0.48
Horse labor	1.85	0.03
Hauling milk	7.90	0.11
Use of buildings	6.20	0.08
Use of equipment	1.80	0.02
Interest on cows	11.90	0.16
Depreciation on cows	5.80	0.08
Bull service	3.70	0.05
Miscellaneous	3.95	0.05
Total costs	$190.20	$2.53
Returns:		
Milk sold wholesale	$169.35	$2.25
Milk and products used (except that fed calves)	7.50	0.10
Milk fed calves	2.80	0.04
Calves and calf hides	3.50	0.05
Manure	12.90	0.17
Miscellaneous	0.35	0.00
Total returns	$196.40	$2.61
Gain	$6.20	$0.08
Cow cost of milk	$163.15	$2.17

Livestock averaged 25.1 per cent of the total capital per farm. On this basis the total capital would be $19,000. This agrees with the average capital of valley farms within 1.5 miles from a milk station. The total receipts amounted to $8987 and the expenses to $6555. The farm income, therefore, amounted to $2432. Deducting 5 per cent interest on capital leaves a labor income of $1457 (table 96).

TABLE 96. FINANCIAL SUMMARY FOR THE HYPOTHETICAL FARM OF 162 ACRES

Average capital:	
Real estate	$12,988
Livestock	4,775
Machinery	1,587
Feed and supplies	150
Miscellaneous	.....
Total	$19,500
Receipts:	
Increase of capital	.....
Crops	$2,994
Livestock sold	695
Milk and its products sold	3,387
Miscellaneous	1,911
Total receipts	$8,987
Expenses:	
Decrease of capital	.....
Livestock purchased	$ 340
Farm expenses	6,215
Total expenses	$6,555
Income from capital and operator's labor	$2,432
Interest at 5 per cent	$975
Labor income	$1,457

If a beginner had started with a loan of $20,000 he could have paid for this farm in eighteen years if he spent $730 per year for cash living expenses.

SUMMARY

This study was made to bring out some underlying principles of farm management on dairy farms in the Chenango area. The first part of the discussion was given to these results for the crop year of 1925.

The year 1925 was the most successful of the five years studied. Unusually favorable weather resulted in good crop yields. Prices of both crops and milk were favorable and the labor income was consequently better than in any other year of the study.

Over the five-year period one-third of the farms made labor incomes of more than $1000. The variation in labor incomes from year to year was great. Only 17 per cent of the farms made $1000 or more in 1922; 60 per cent made $1000 or more in 1925.

The two factors that had the greatest influence on labor income were the cost of producing milk and the percentage of the income that came from crops sold.

The cost of milk depended mainly on the cost of feed and labor, the production per cow, and the distance to market.

The five-year average gross cost per 100 pounds of milk produced was $2.85. Of this cost, feed was 56 per cent and labor 22 per cent. The cost per cow averaged $175. The five-year average loss per 100 pounds

of milk was 25 cents, the loss per cow was $15. The crop year 1925 was the only year in which there was a slight gain from the dairy enterprise.

The production per cow depended on the grade of cows and the percentage of the cows freshening in the fall. The production of purebred herds was better but the cost was also higher than in mixed grade and purebred herds or in all grade herds. The mixed herds made the best labor incomes. The production per cow in these mixed herds was better than in herds with all grade cows, while the cost was less than in purebred herds. The production per cow increased as the percentage of the cows freshening from September to December, inclusive, increased.

The tendency was for labor income to increase as the percentage of the income derived from crops increased. The percentage of the income derived from crops depended mainly on the acreage of peas and cabbage. Altho peas were the higher-priced crop, cabbage proved the more-profitable crop. The adequate supply of rainfall and manure and the soils suitable for the growth of cabbage resulted in high yields of cabbage per acre. The costs of harvesting and marketing peas were so high that the difference between receipts and expenses was less than that between receipts from and expenses on cabbage.

Other factors that influenced labor income were size of farm, number of hens kept, and location of farms.

Seventy per cent of the farms were less than 180 acres in size. On the other hand there were few small farms. The average capital was $15,835. The amount of capital per farm depended mainly on the acres operated, the acres of crops grown, and number of cows. The general trend indicated that labor income increased with an increase in capital, but the relationship was not linear, for after the capital amounted to $25,000 an increase in capital showed a decrease in labor income.

The poultry industry was profitable during the five years, and as the poultry enterprise did not interfere with other enterprises many farms increased the size of their poultry flock.

Over the five years hill farms proved more profitable than valley farms. The valley farms made better labor incomes than the hill farms in years with good crop yields and prices.

It was not efficiency in any one factor that caused a farm to be successful but rather a good combination of all factors. There was, therefore, no marked changes in farm practices. Labor was used more efficiently in the latter than in the earlier years of the study but no changes of importance were made in dairy-herd practices, fertility practices, or use of equipment. These conclusions were borne out by a study of the 54 identical farms studied for the five consecutive years.

Share-rented farms gave landlords better returns than did cash-rented farms. Tenants made better returns on cash-rented farms but furnished larger capital than when the farm was share-rented.

A study was made of some successful types and businesses, and a hypothetical farm and farm business was constructed to combine all factors discussed.

The main principle brought out by the study of this hypothetical farm and farm business was that diversification of farming would, on the one hand, give a better distribution of labor and, on the other hand,

would reduce the risk of a total failure on the farm in any year. The dairy herd and the poultry flock provide all-year work. The poultry flock can be cared for by the women and children and need not interfere with other enterprises. During the spring and summer months when crops require most attention, the cows are turned out to pasture and thus the work of caring for them is reduced. With a diversified business the failure of any one enterprise does not mean that the farm as a whole will not show a profit.